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BAKER OIL TOOLS, INC.

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19 Rector Street, New York, N. Y.

General Heading: **BAKER MODEL "B" CASING CENTRALIZER**

Unit No. **A-13**

Subject: **How Casing Centralizers Can Assist in Securing Successful "First Time" Cement Jobs**

Index: 250.1
Date: August 13, 1942
Page: 1 of 1 p.

Under present-day conditions, to avoid unnecessary waste of time and materials, it is essential in cementing casing that successful results be secured the *first time*.

There are, of course, many factors which influence the securing of a successful first-time cement job, one of the most important being the provision of a uniform annulus for the slurry at the critical cementing point.

Field results have indicated that the use of Baker Model "B" Casing Centralizers constitutes a particularly efficient, low-cost method of centering casing strings, permitting opportunity for more complete encasement of the pipe with a uniform body of cement and reducing the hazard of channeling to a minimum.

As evidence of the effectiveness of the Baker Model "B" Casing Centralizer, below is reproduced *verbatim* an abstract from a field report made by a Baker representative on a job performed recently in the Griffin, Indiana, area. (Details of this job are illustrated in Fig. 1.)

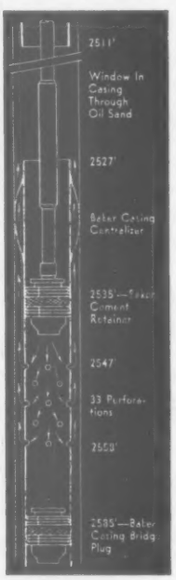


Fig. 1
Arrows indicate direction of fluid.

"When this casing string was run, one of our Casing Centralizers had been placed just below 2527'. The XXXXXX Company men that were on the job were very convincing in their feeling that it was because of this Casing Centralizer that a perfect job of squeezing was obtained. They felt that the Casing Centralizer had held the casing in the center of the hole at this vital point so that when the casing was cemented, a perfect bond of cement was obtained completely around the casing. Had this not been true, the cement would have circulated around on the squeeze job."

For more complete details concerning the Baker Model "B" Casing Centralizer, see pages 248-249 of the 1942 Baker or Composite Catalog.

SERVICE NOTE: Baker Casing Centralizers are stocked by most supply stores—or are available for *immediate shipment* from conveniently located Baker warehouses.

CONSTRUCTION AND OPERATION HIGHLIGHTS

Baker Casing Centralizers are simple in both design and construction and are sturdily made of materials best suited to give the unit the necessary strength for the job to be done.

An important feature of the Baker Casing Centralizer from an operating standpoint is that whether the casing is being lowered or raised, the Centralizer is always *pulled* through the casing or past a restriction in the open hole . . . never *pushed*. This pulling action eliminates any possibility of the Centralizer Springs being distorted or damaged while landing the casing.

Product No. 910
Fig. 2
Baker Model "B" Casing Centralizer.

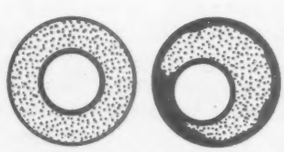


Fig. 3
Note Uniform Body of Cement Around the Pipe at the Shoe Joint when Casing is Properly Centered.

Fig. 4
Note hazard of Channeling Behind Off-Centered Casing.

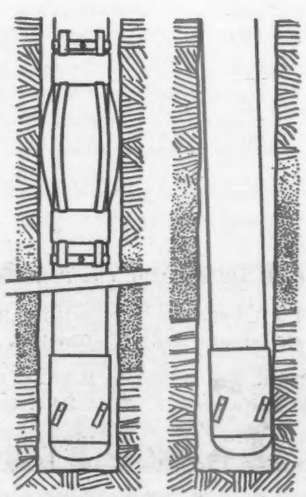
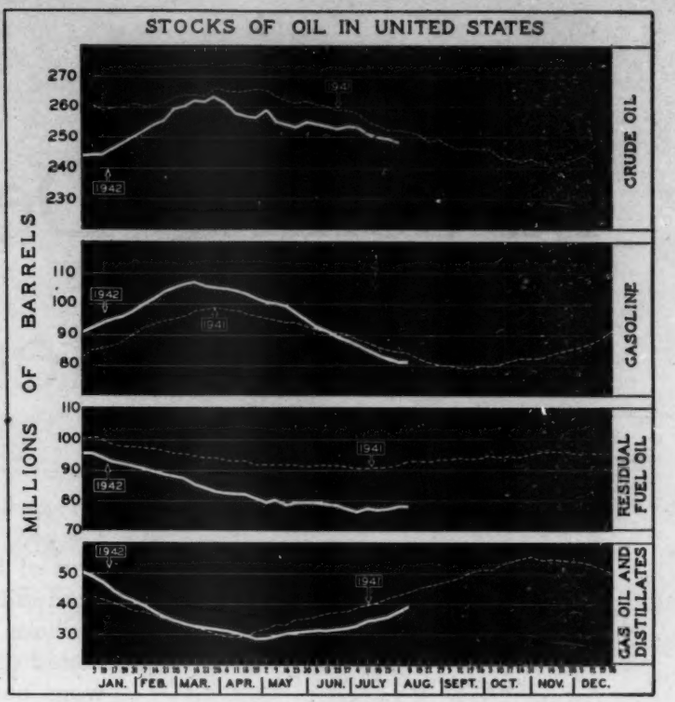


Fig. 5 (Right)—Showing Casing at Shoe Joint Centered Through Use of Baker Casing Centralizer.

Fig. 6 (Extreme Right)—Showing How Off-Centered Casing Leans Against Side of Hole at Shoe Joint.

Trends

New Committee May Define the Pattern of Future Oil Operations



DEVELOPMENTS in the near future may show that the appointment of the Baruch-Conant-Compton committee by the president last week was the most important action taken by the Government so far in the war, affecting future oil operations. While the committee was appointed to report on the rubber situation it is agreed by observers that in arriving at its decision it will have to consider several other matters having to do with the conduct of the war.

CRUDE PRODUCTION *3,997,155 bbl. daily average—up 604,540 bbl. One year ago 3,899,240 bbl.*

CRUDE STOCKS *248,336,000 bbl. as of Aug. 1 — down 926,000 bbl. One year ago 252,535,000 bbl.*

GASOLINE STOCKS *81,315,000 bbl. as of Aug. 8—down 9,000 bbl. One year ago 84,073,000 bbl.*

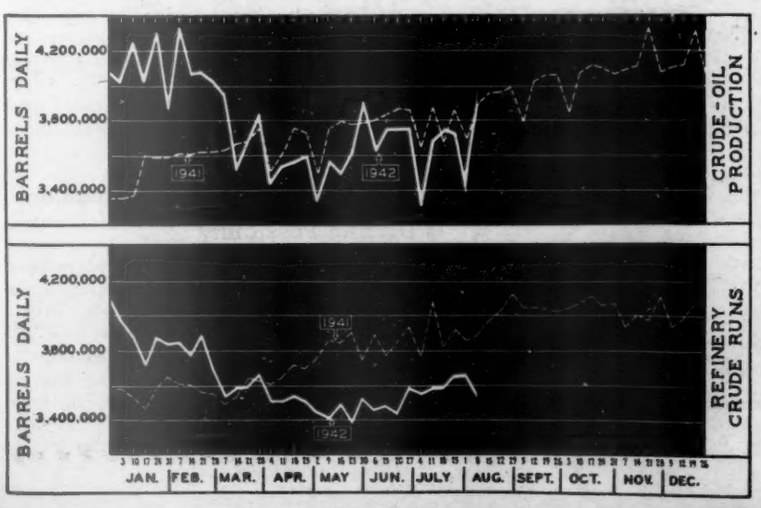
RESIDUAL FUEL-OIL STOCKS *78,575,000 bbl. as of Aug. 8—up 192,000 bbl. One year ago 93,189,000 bbl.*

GAS OIL AND DISTILLATES *39,024,000 bbl. as of Aug. 8—up 1,494,000 bbl. One year ago 43,996,000 bbl.*

REFINERY RUNS *3,561,000 bbl. daily week ended Aug. 8—down 111,000 bbl. One year ago 3,912,000 bbl.*

The committee has been asked to make a definite decision as to whether or not there is sufficient rubber of all types on hand and in prospect to justify present rubber consumption. This involves an agreement as to the rubber that can be made available over the remainder of this year and during 1943 and 1944 through reclaiming programs and through the production of synthetic materials. Washington agencies have had this information for several weeks but it rests with this nonpolitical committee to make an authoritative statement which presumably will be accepted by users of rubber and petroleum.

Should the committee decide that rubber supplies are not sufficient for all requirements a motor-vehicle curtailment program to be made effective by restricting car mileage of civilians or through the extension of gasoline rationing, is in prospect. The answer to this question naturally would include an investigation of petroleum-transportation conditions and what has to be done to assure the minimum required deliveries of all products to areas directly affected by the reduction in tanker transportation. A decision regarding this situation would include not only gasoline but all other petroleum products and would involve production and transportation in all areas. Thus the findings of this committee may give the petroleum industry its pattern of operations over the next few months at least.



DAILY AVERAGE PRODUCTION FOR WEEK

	Aug. 8 crude oil	Aug. OPC quota all oils	Aug. 1 crude oil
Arkansas	72,600	81,600	72,500
California	709,750	767,200	680,250
Colorado	6,345	7,200	6,380
Eastern fields	102,550	110,000	91,250
Illinois	279,430	289,300	270,855
Indiana	18,325	20,600	17,960
Kansas	256,250	281,900	280,050
Louisiana	331,900	332,600	330,800
North Louisiana	*97,200*	.....	*96,200*
Louisiana Gulf Coast	*234,700*	.....	*234,600*
Michigan	62,400	66,800	62,500
Mississippi	75,300	50,000	82,000
Montana	22,960	22,700	22,310
Nebraska	3,800	4,100	3,600
New Mexico	88,450	97,300	88,430
Oklahoma	388,975	415,500	383,000
Texas	1,484,100	1,396,700	906,550
East Texas	*420,000*	.....	*218,050*
West Texas	*247,850*	.....	*138,200*
North Central Texas	*139,100*	.....	*139,100*
East Central Texas	*91,550*	.....	*74,350*
Texas Panhandle	*100,000*	.....	*65,800*
Texas Gulf Coast	*404,500*	.....	*221,250*
Southwest Texas	*81,100*	.....	*49,300*
Wyoming	94,020	95,000	94,180
Total United States	3,997,155	4,038,500	3,392,615
Total production January 1-August 8, 1942			829,384,145 bbl.
Same period last year			811,503,990 bbl.

Representatives of OPC gave additional warnings the past week that restrictions in the movement of gasoline in nonrationed areas may be necessary in order to increase the shipments of fuel oil and distillate to eastern consumers. In the Middle West and Mid-Continent the opinion was expressed that recent shipments of crude oil and products in those areas can be maintained provided no additional tank cars are taken over for the eastern service. Surveys in the inland states show steady progress in increasing the movement of crude oil and products with existing pipe lines, tank cars, trucks, and inland waterways. Expansion in the use of trucks for short and long hauls in place of tank cars, have been outstanding.

Rationing Decision Postponed As Committee Studies Rubber

By J. P. O'DONNELL

Gasoline consumption started the year with increases over the start of 1941. This situation has gradually changed so in June civilians in all states—in the rationed and nonrationed areas—were consuming up to 31 per cent less gasoline than in June last year. These and other phases of consumption under a war economy are discussed in this article.

NEW YORK, N. Y.—President Roosevelt's appointment of the three-man Baruch committee to study the nation's rubber position and present a report which "will form a basis for future action on such matters as nation-wide gasoline rationing and motor transportation" dissipates whatever fears the industry held that such rationing is imminent. It indicates that no action will be taken at least until after the committee's report is completed.

It is expected that the three-man committee will give special consideration to transportation conditions in the petroleum industry as well as developments having a direct bearing on rubber supplies and demands. Government officials have stated recently that sufficient transportation will not be available to expand shipments to the eastern states to take care of the increases in fuel oil demands this fall and winter. The suggested solution to this problem has been to make more tank cars and pipe lines available for the movement of fuel oils by reducing the movement of gasoline to be brought about through the extension of motor-fuel rationing in the Middle, Western, Rocky Mountain, and Southwestern states.

In regard to the trends in gasoline consumption most of the data available reflect only civilian consumption and do not include in full the military demands which are not made public and which are not subject to the state gasoline taxes. No data are available on gasoline exports. It is known that a steady increase in domestic and export military demands for motor fuels is assured. It is pointed out in this connection that by early 1943 refiners in this country will be producing approximately 200,000 bbl. daily of 100-octane motor fuel for use in this country and other allied countries. In regard to the total demands for motor fuels the latest figure is that of OPC which estimates that August total requirements will be 18 per cent less than in August 1941.

Gasoline Consumption Declines

The trend of gasoline consumption throughout the country is indicated in the accompanying table which shows the percentage decline in consumption by states and OPC districts by months. It will be noted that in January all but eight of the states and the District of Columbia registered gains over January of last year, whereas in May only seven reported increases. Preliminary figures for June indicate that at least four of the seven replaced the increases with decreases in that month. Data for the first 5 months of the year were compiled by the statistical department of the American Petroleum Institute and the preliminary figures for June by the Federal Works Agency.

While the District 1 rationed area showed the largest decline, it is obvious from a study of the District 2 reports covering the largest gasoline-consuming area in the country that the rubber shortage has acted as a serious depressent. The indicated gasoline consumption in unrationed District 2 in May was off 13.5 per cent from a year ago and, on the basis of reports from 10 of the 15 states comprising the district, it was down 15.9 per cent in June.

DECLINE IN GASOLINE CONSUMPTION BY STATES AND DISTRICTS*

	Per cent decline from 1941			
	Jan.	Mar.	May	June†
District 1—				
Maine	+12.9	+4.7	−25.6	..
New Hampshire	+12.4	−2.2	−30.5	..
Vermont	+2.5	+1.0	−29.9	−29.3
Massachusetts	+4.8	−4.3	−30.3	..
Rhode Island	+5.8	−5.5	−28.3	−31.0
Connecticut	+10.5	+0.2	−13.6	−27.3
New York	−0.1	−5.3	−26.9	−28.7
New Jersey	+10.4	+2.5	−24.1	..
Pennsylvania	+8.0	−1.0	−21.0	..
Delaware	+9.2	+1.4	−19.5	..
Maryland	+11.2	+2.2	−19.8	..
District of Columbia	+2.6	+1.2	−20.7	..
Virginia	+9.3	+1.1	−21.7	−21.8
West Virginia	+15.0	−3.5	−15.9	..
North Carolina	+1.4	−4.1	−20.0	..
South Carolina	+1.7	−3.3	−21.8	..
Georgia	+4.7	−8.1	−21.6	−21.6
Florida	−2.0	−6.8	−7.0	..
District 1	+5.2	−2.5	−23.1	−27.3
District 2—				
Ohio	+6.1	−3.1	−9.6	−12.4
Michigan	+2.7	−7.9	..	..
Kentucky	−11.1	−10.6	−10.4	..
Tennessee	+9.7	−18.5	−0.0	−3.9
Indiana	+7.8	−7.0	−10.8	−17.9
Illinois	+4.3	−17.7	−15.9	−17.5
Wisconsin	+7.2	+1.4	−13.9	−14.9
Minnesota	+11.9	+7.2	−13.6	−19.2
North Dakota	+41.7	+38.2	−10.0	−24.2
South Dakota	+11.2	−1.1	−24.7	..
Iowa	+4.7	+6.6	−9.5	−15.0
Nebraska	−4.4	−12.8	−17.9	..
Kansas	+4.2	−7.4	−15.9	−18.7
Missouri	+3.7	−9.6	−17.3	−20.4
Oklahoma	+1.3	−9.4	−22.9	..
District 2	+9.6	−6.6	−13.5	−15.9
District 3—				
Arkansas	+9.1	−10.2	−7.6	−6.4
Texas	+12.2	+6.3	+5.1	−17.3
Louisiana	+1.0	−24.6	−12.2	−10.8
Mississippi	+25.2	+2.3	+1.6	−1.8
Alabama	+20.5	+1.4	−5.3	−5.0
New Mexico	−0.2	−7.2	−8.1	−9.2
District 3	+12.2	−1.0	+0.7	−12.1
District 4—				
Montana	+0.8	−24.4	−22.8	..
Idaho	+1.1	−14.3	−5.3	−10.2
Wyoming	−5.9	−4.3	−22.5	−20.5
Utah	+1.2	−6.5	−11.0	−14.1
Colorado	−0.1	−6.5	−9.9	..
District 4	−0.2	−11.5	−14.0	−14.4
District 5—				
Arizona	+8.1	+6.4	−4.1	..
Nevada	+20.9	+20.4	+2.6	..
California	+20.8	+15.9	+6.0	..
Oregon	+7.5	+13.5	−8.4	−12.4
Washington	+15.9	+8.5	+3.6	..
District 5	+18.4	+14.2	+3.8	−12.4
Total United States	+7.3	−1.9	−13.5	−17.2

*A.P.I. compilation from state tax receipt reports.
†Federal Works Agency. District figures represent trend shown by partial reports.

None of the remaining districts recorded declines as great as those in Districts 1 and 2 but the indicated widening of the margin of decline in District 3 gasoline consumption is significant. In the 3 months previous to June this district's consumption was only slightly below that of last year but in June it dropped 12.1 per cent. District 4 apparently changed only slightly in June. The availability of only one report from District 5, which is dominated by California, makes it impossible to make any valid estimates of the trend there. For the country as a whole gasoline consumption changed from an indicated increase of 7.3 per cent in January to an approximate 13.5 per cent decline in May and an indicated 17.2 per cent decline in June.

On the basis of one-third of the states' reports, it is estimated that civilian consumption in District 1 dropped 27.3 per cent in June. This would be a reduction of almost 5,500,000 bbl., equal to 182,000 bbl. a day, from last year. Despite this apparent reduction, the PIWC economics subcommittee found that demand from May 15 to June 27 averaged 540,000 bbl. per day for the district, or 35 per cent above the estimated minimum essential requirements to which the committee recommended that consumption be cut.

Heating Oil Stocks Gain

This excess gasoline demand accounts for the fact that present District 1 stocks are reported to be under what they were on April 1. During the 4 months of April, May, June and July, last year, stocks of heating oil increased more than 5,600,000 bbl., or some 70 per cent. Some additions have been made to heating-oil stocks in recent weeks, but they are far short of the amount needed to meet next winter's estimated minimum requirements. Therefore, one of two alternatives must be adopted; deliveries must be expanded or present consumption rates reduced.

If any further restrictions are to be placed on consumption in District 1, it is probable that they will be imposed on gasoline first. This is expected to be done by reducing the value of ration-book coupons. The severity of the reduction will be dependent on the need, and if further deliveries are not substantially increased, it is likely to be very heavy. A coupon plan for rationing fuel oil is reported due next month. It is hoped to achieve a 25 per cent cut in consumption. A degree-day system, and last year's consumption will form the basis for rationing. Oil companies and 6,000 distributors are now engaged in a consumer education program urging conversion and conservation.

●

Davies Warns Rationing Extension Is Distinct Possibility

WASHINGTON, D. C.—Extension of gasoline rationing to other areas of the country is a definite possibility, according to Ralph K. Davies, deputy petroleum coordinator. This, he says, will be brought about by the necessity to continue to call upon present unrationed areas to give up tank cars and other transportation facilities,

which will be done regardless of the effect upon oil supplies of these areas.

Nearly 2,400 additional tank cars have been shifted into East Coast oil transportation service as a result of the recent request for 5,000 more cars, Mr. Davies stated. He predicted that the 5,000-car quota would be met, and that additional cars would be called upon if the railroads can haul them.

"We have no intention of stopping with this 5,000-car quota," Mr. Davies said. "If, when the 5,000 additional cars are in service, the railroads find they still can haul still more, then we shall immediately go after more. We shall continue to go after them until the railroads tell us, 'this is the limit of our capacity—we can handle no more.'"

Mr. Davies said the present unrationed areas would have to accept this as an inevitable consequence of the war just as the eastern states have already accepted it.

"I know they will do so in good spirit," he said.

Three-Man Board Should End Confusion on Rubber

WASHINGTON, D. C.—An early end to the confusion and controversy over the rubber situation is expected from a special committee appointed by President Roosevelt August 6 when he vetoed the Gillette bill to require the production of synthetic rubber from farm products.

The committee is composed of Bernard M. Baruch, venerable industrialist and chairman of the War Industries Board during the last war; Dr. James B. Conant, president of Harvard University, and Dr. Karl T. Compton, president of Massachusetts Institute of Technology.

The appointment of this committee apparently satisfied the backers of the Gillette bill, for the veto message was referred to the Senate committee on agriculture for further study and it is not expected that an attempt will be made to override the veto during the 60 days which Senate rules provide.

The president's veto was not based on opposition to the alcohol process for making butadiene, though he did state that the present program calls for using nearly 100,000,000 bushels of grain which may be needed for food. His chief objections were that the bill would take away from the War Production Board its authority to allocate critical materials by giving the proposed new agency unlimited power to draw on materials for plant construction, and that it proposed to supply sufficient rubber for all civilian demands regardless of how this would affect the war program. He also pointed out that new processes for making rubber are being developed constantly and the program should be left flexible instead of frozen by legislation.

WPB Survey Nears Completion

Oil companies who recently received questionnaires on critical materials requirements for the last quarter of the year were mailing them to OPC this week. The questionnaire requested return by August 15.

Information obtained from the questionnaire will be submitted to the requirements committee of WPB. The questionnaire covers all branches of the petroleum industry and includes maintenance, repair, and operating supplies and new construction requirements. WPB is attempting to determine the use in the oil industry of the critical materials listed in Materials List 1, revised.

The first weld on the 550-mile pipe line from Longview, Tex., to Norris City, Ill., was made at noon, August 3, by Williams Brothers Corp., first of the seven contractors to begin construction. The 24-in. line, largest completely arc-welded crude-oil pipe line in the world, started near the Texas-Arkansas line. The picture shows welders lining up and tacking two sections of the seamless steel tubing. The line is expected to be completed and in service by Christmas

This Week...

PRODUCTION.—August proration schedule for Texas amended to increase allowable production of 40 fields in excess of 94,000 bbl. daily. Increase granted to provide additional supplies of special crudes for manufacture of essential war products. . . . United States Senate expected to follow lead of the House in retaining depletion allowance provision in taxation of oil and gas properties. . . . Smackover field given field-wide exemption to well-spacing regulation of Conservation Order M-68. Exemption to expedite plug-back work. . . . California operators failed to produce crude allotment during July. Field operations may have to be stepped up.

MARKETS.—Maximum gasoline prices along eastern seaboard reduced 2.5 cents as transportation cost subsidy plan replaces January price advances rescinded by OPA. Corresponding reductions made in prices of other products. . . . Report shows downward trend in gasoline consumption gains momentum as result of rationing and rubber situation. . . . General market aspect strong. Gasolines tight in Middle West, Mid-Continent and East Coast with prices advancing to ceiling levels. Refineries hard pressed to fill commitments. Demand for burning oils and light fuels active. Transportation is factor.

REFINING.—Investment of $90,000,000 to be made in new plant of Rubber Synthetics, Inc., at Gary, Ind., to provide facilities for making all components of the synthetic rubber and for polymerizing them on the grounds. . . . Full construction resumed on 45,000-ton-per-year synthetic rubber plant being built by Rubber Reserve Corp. at Borger, Tex., for operation by Phillips Petroleum Co.

TRANSPORTATION.—Arrangements completed by American Liberty Pipe Line Co. for taking up 200-mile, 8-in. East Texas-Gulf Coast pipe line and relaying across northern Florida by Trans-Florida Pipe Line. Line to link Gulf Coast and Atlantic seaboard canal systems. . . . Texas Pipe Line Co. lets contracts for doubling its North Texas-South Louisiana trunk line. New loops to total 113 miles of 8-in. and 10-in. pipe. . . . Plans being completed for increasing shipments of petroleum products from southwestern fields and refining centers to rationed eastern states. Small refiners and suppliers who have not been incorporated in the "solid train" program will participate.

RUBBER.—Appointment by President Roosevelt of three-man committee to study nation's rubber position expected to end confusion and controversy over rubber situation. Appointment of committee also serves to appease proponents of vetoed Gillette bill providing for use of grains in manufacture of synthetic rubber. . . . Officials of Rubber Reserve Co. say petroleum rubber route more economical than alcohol. Estimates on alcohol costs claimed too low.

RATIONING.—Shifting of additional tank cars to East Coast oil-transportation service may force extension of gasoline rationing to present nonrationed areas, Deputy Petroleum Coordinator Davies declares. . . . Others believe any action on extension of rationing may be delayed pending report by Baruch special rubber committee, appointed by President Roosevelt, covering transportation conditions.

PRIORITIES.—Supply companies to play important role in redistribution of materials now held by petroleum industry. William F. Huff, assistant deputy coordinator for OPC, discusses problems with oil-company representatives. . . . Many in industry favor modified Production Requirements Plan for obtaining equipment. . . . WPB survey on critical materials requirements nearing completion. . . . Heat exchangers placed under system of completed allocations.

Operators Oppose Several Features of Materials Plan

By HARRY F. SIMONS

The plan presented to the petroleum industry by W. F. Huff of OPC called for: (1) A practically complete inventory of excess material. (2) The establishment of district offices for maintaining a perpetual inventory system. (3) Access to these inventory records for oil companies and established supply companies. (4) A fee of 5 per cent to the established supply companies for handling transactions between oil companies, and (5) Reports to OPC in Washington on the state of supply of oil-field materials.

The plan favored by the oil companies as shown at the meeting in Tulsa includes: (1) An inventory of the 15 principal items used in oil production and drilling. (2) An inventory each 90 days of the principal items of new and second-hand equipment. (3) A committee from the established supply companies to design the necessary forms, establish the procedure for the consolidation of the inventory, accumulate data on the costs of this method, recommend proper handling charge and compile data for OPC and OPA. (4) A study of the supply of new materials problem by the district production committees, PIWC and OPC. (5) The development of a modified PRP plan to facilitate the procurement of new oil-field material.

REGARDLESS of the plan ultimately adopted by WPB and OPC for the redistribution of materials now held in the petroleum industry, the supply companies will play a very important role if suggestions of the leaders of the oil group are followed out. This became clear after the meeting between William F. Huff, assistant deputy coordinator for OPC, and representatives of the industry in Tulsa last week.

The comment at the meeting left little doubt that the tentative OPC plan was not considered feasible by representatives of the oil industry. Principal objections were the cost in men and money, the cumbersomeness of the arrangements and the questionable results that could be obtained. Another factor which is important from the oil industry angle is the fitting in of any material-survey plan with the over-all plan for the operation of the oil industry during the war.

The meeting was the last in a series held around the country for the purpose of developing a workable plan for the distribution of present stocks and the obtaining of new supplies. The latter is considered by men in the industry to be more important than the distribution of present equipment stocks.

Practically everyone at the general meeting agreed on the point of using the supply companies in solving the problem. One independent producer, E. B. Shawver, of Kansas, said that without the supply companies the small operating company was lost. He added that the supply companies were already familiar with the problem, knew where much of the material was located, what types of material were needed in certain localities, and how to maintain the necessary inventories. He also brought up another point on which there is agreement in the industry the avoidance, if at all possible, of an arrangement such as OPA with its "90,000 employes."

Following the general meeting, Mr. Huff met with a committee appointed by L. F. McCollum, president of Carter Oil Co., who was presiding. It was reported that at this meeting concrete suggestions, embodying the plans developed by committees from Kansas and Oklahoma, were condensed and put in shape so they could be taken back to Washington. Action in the matter is expected within the next week or 10 days.

Modified PRP

At present many in the industry favor a modified Production Requirements Plan for obtaining equipment considered as capital investment material and something similar to the expired P-98 for the continued flow of materials needed for repair, maintenance and operation. Under a modified PRP, the material needed for a project would be allotted following approval of a submitted schedule of development.

The PRP plan was designed originally for manufacturers and fabricators from semifinished products obtained from the steel mill. The oil companies use very little of this type material as they manufacture practically nothing in the way of finished equipment. Finished machinery and equipment items are purchased for use in drilling, producing, transporting and refining oil.

One executive pointed out that this introduces an extra step not covered by PRP which is for the allocation of raw material to the manufacturer instead of finished products to the user. What will be needed is an allocation of raw material to the manufacturers of oil-field equipment in the name of the oil industry, according to the executive. The allocation will be based on the needs for a specified period as estimated by the oil companies.

Role of Supply Companies

At present the supply companies are acting as a voluntary clearing house in the adjustment of inventories. There are a number of companies who realize they are overstocked on a number of items and they are listing such items as available with the supply companies. Whenever an oil producer or drilling contractor requires a certain item the supply companies consult these lists as well as their own stock lists and if they cannot supply the item they can tell the customer where he can get it. The supply companies do not know where they stand on charging a brokerage fee for handling transactions between different organizations in the oil industry. In some cases the fee is not large enough to bother about collecting.

Under the plan as suggested by Mr. Huff, the supply companies would get a fee of 5 per cent for handling such transactions. Most suppliers are willing to assume this duty although they

(Continued on Page 33)

New Priority Order Before WPB Awaiting Issuance

WASHINGTON, D. C.—A new priority order for the oil industry was before the WPB clearance committee Tuesday but at a late hour it appeared that it would not be issued before Wednesday or Thursday.

The new order, which it is understood will be called P-98-B, replaces the old P-98 which expired August 1. Since that date there has been no legal means for the industry to obtain any materials except on PD-1-A forms or ratings of A-10 under Order P-100. Where orders rated under old P-98 have been filled they have been in violation of law but generally in good faith and no prosecutions are anticipated because OPC had given the industry to understood that P-98 would be extended unless a substitute were ready by August 1. It is understood that OPC did not present the new order to WPB until August 8 and then in a form which required rephasing of legal language before issuance by the War Production Board.

The new order will be confined strictly to maintenance and repair, and all material for new drilling must be secured under a separate project rating. It is understood that it carries ratings of A-6 for marketing and A-2 for the rest of the industry but its use is restricted to actual or imminent breakdowns and will not permit building up inventories of repair material. If these ratings are not high enough to obtain material in individual application must be made on Form PD-1-A.

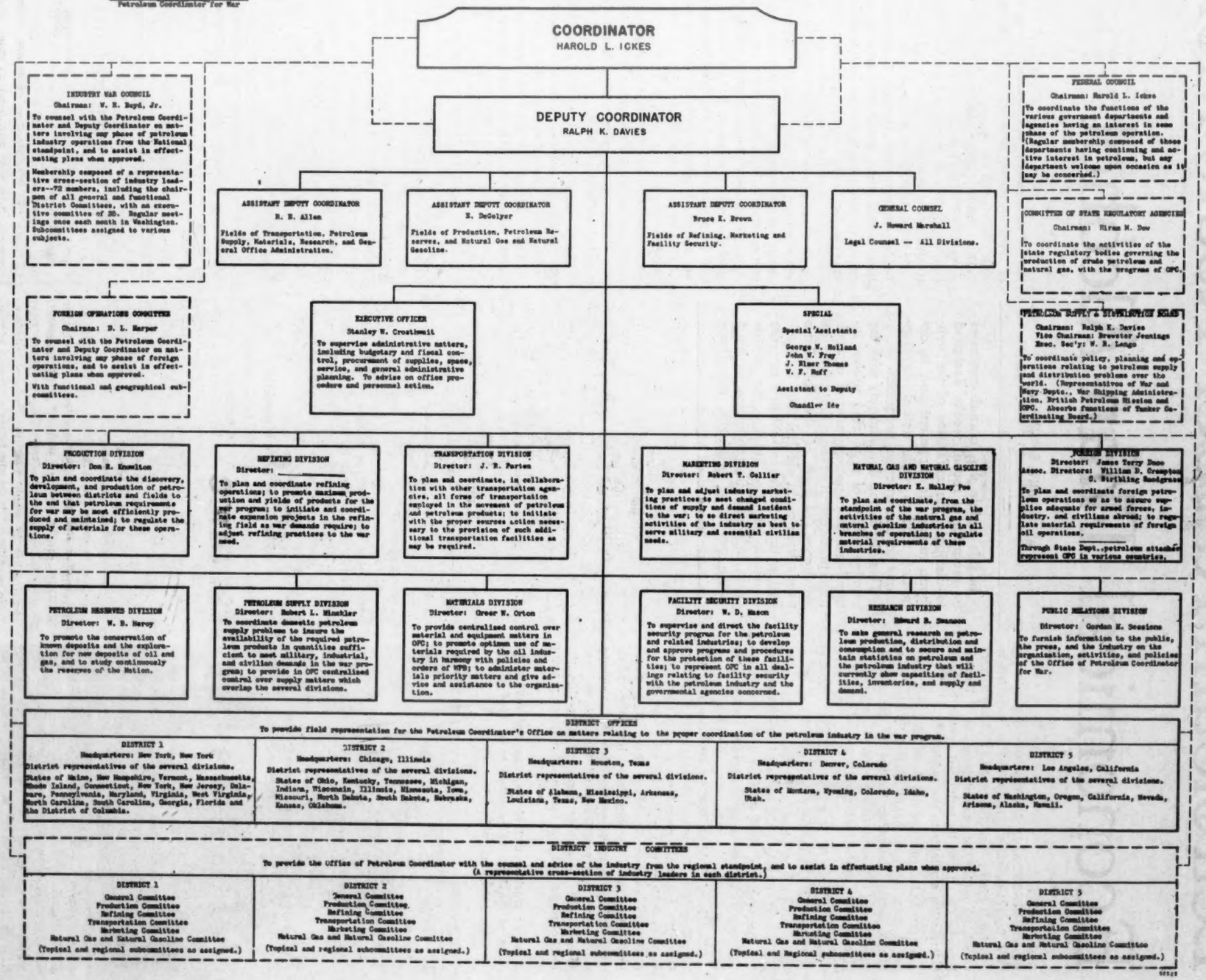
OPC Organization Chart

Reproduced on the opposite page is a chart showing the organization and personnel of the Office of Petroleum Coordinator for War. At this writing a successor had not been appointed to fill the vacancy caused by the resignation of Wright W. Gary, director of refining. P. M. Robinson is acting director.

Approved July 14, 1942
Harold L. Ickes
Petroleum Coordinator for War

ORGANIZATION OF THE

OFFICE OF PETROLEUM COORDINATOR FOR WAR


COORDINATOR
HAROLD L. ICKES
DEPUTY COORDINATOR
RALPH K. DAVIES
INDUSTRY WAR COUNCIL
Chairman: W. R. Boyd, Jr.
To counsel with the Petroleum Coordinator and Deputy Coordinator on matters involving any phase of petroleum industry operations from the National standpoint, and to assist in effectuating plans when approved.
Membership composed of a representative cross-section of industry leaders--72 members, including the chairmen of all general and functional District Committees, with an executive committee of 20. Regular meetings once each month in Washington. Subcommittees assigned to various subjects.
ASSISTANT DEPUTY COORDINATOR
R. H. Allen
Fields of Transportation, Petroleum Supply, Materials, Research, and General Office Administration.
ASSISTANT DEPUTY COORDINATOR
E. DeGolyer
Fields of Production, Petroleum Reserves, and Natural Gas and Natural Gasoline.
ASSISTANT DEPUTY COORDINATOR
Bruce K. Brown
Fields of Refining, Marketing and Facility Security.
GENERAL COUNSEL
J. Howard Marshall
Legal Counsel -- All Divisions.
FEDERAL COUNCIL
Chairman: Harold L. Ickes
To coordinate the functions of the various government departments and agencies having an interest in some phase of the petroleum operation. (Regular membership composed of those departments having continuing and active interest in petroleum, but any department welcome upon occasion as it may be concerned.)
COMMITTEE OF STATE REGULATORY AGENCIES
Chairman: Hiram M. Dow
To coordinate the activities of the state regulatory bodies governing the production of crude petroleum and natural gas, with the programs of OPC.
FOREIGN OPERATIONS COMMITTEE
Chairman: D. L. Harper
To counsel with the Petroleum Coordinator and Deputy Coordinator on matters involving any phase of foreign operations, and to assist in effectuating plans when approved.
With functional and geographical subcommittees.
EXECUTIVE OFFICER
Stanley W. Crosthwait
To supervise administrative matters, including budgetary and fiscal control, procurement of supplies, space, service, and general administrative planning. To advise on office procedure and personnel action.
SPECIAL
Special Assistants
George W. Holland
John W. Frey
J. Elmer Thomas
W. F. Ruff
Assistant to Deputy
Chandler Ide
PETROLEUM SUPPLY & DISTRIBUTION BOARD
Chairman: Ralph K. Davies
Vice Chairman: Brewster Jennings
Exec. Sec'y: W. R. Longo
To coordinate policy, planning and operations relating to petroleum supply and distribution problems over the world. (Representatives of War and Navy Depts., War Shipping Administration, British Petroleum Mission and OPC. Absorbs functions of Tanker Coordinating Board.)
PRODUCTION DIVISION
Director: Ben H. Knowlton
To plan and coordinate the discovery, development, and production of petroleum between districts and fields to the end that petroleum requirements for war may be most efficiently produced and maintained; to regulate the supply of materials for these operations.
REFINING DIVISION
Director: _____
To plan and coordinate refining operations; to promote maximum production and yields of products for the war program; to initiate and coordinate expansion projects in the refining field as war demands require; to adjust refining practices to the war need.
TRANSPORTATION DIVISION
Director: J. R. Parten
To plan and coordinate, in collaboration with other transportation agencies, all forms of transportation employed in the movement of petroleum and petroleum products; to initiate with the proper sources action necessary to the provision of such additional transportation facilities as may be required.
MARKETING DIVISION
Director: Robert T. Collier
To plan and adjust industry marketing practices to meet changed conditions of supply and demand incident to the war; to so direct marketing activities of the industry as best to serve military and essential civilian needs.
NATURAL GAS AND NATURAL GASOLINE DIVISION
Director: E. Holley Poe
To plan and coordinate, from the standpoint of the war program, the activities of the natural gas and natural gasoline industries in all branches of operation; to regulate material requirements of these industries.
FOREIGN DIVISION
Director: James Terry Duce
Assoc. Directors: William D. Crompton
C. Stribling Snodgrass
To plan and coordinate foreign petroleum operations so as to assure supplies adequate for armed forces, industry, and civilians abroad; to regulate material requirements of foreign oil operations.
Through State Dept.,petroleum attaches represent OPC in various countries.
PETROLEUM RESERVES DIVISION
Director: W. B. Heroy
To promote the conservation of known deposits and the exploration for new deposits of oil and gas, and to study continuously the reserves of the Nation.
PETROLEUM SUPPLY DIVISION
Director: Robert L. Minckler
To coordinate domestic petroleum supply problems to insure the availability of the required petroleum products in quantities sufficient to meet military, industrial, and civilian demands in the war program; to provide in OPC centralized control over supply matters which overlap the several divisions.
MATERIALS DIVISION
Director: Greer W. Orton
To provide centralized control over material and equipment matters in OPC; to promote optimum use of materials required by the oil industry in harmony with policies and orders of WPB; to administer materials priority matters and give advice and assistance to the organization.
FACILITY SECURITY DIVISION
Director: W. D. Mason
To supervise and direct the facility security program for the petroleum and related industries; to develop and approve programs and procedures for the protection of these facilities; to represent OPC in all dealings relating to facility security with the petroleum industry and the governmental agencies concerned.
RESEARCH DIVISION
Director: Edward B. Swanson
To make general research on petroleum production, distribution and consumption and to secure and maintain statistics on petroleum and the petroleum industry that will currently show capacities of facilities, inventories, and supply and demand.
PUBLIC RELATIONS DIVISION
Director: Gordon H. Sessions
To furnish information to the public, the press, and the industry on the organization, activities, and policies of the Office of Petroleum Coordinator for War.
DISTRICT OFFICES
To provide field representation for the Petroleum Coordinator's Office on matters relating to the proper coordination of the petroleum industry in the war program.
DISTRICT 1
Headquarters: New York, New York
District representatives of the several divisions.
States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida and the District of Columbia.
DISTRICT 2
Headquarters: Chicago, Illinois
District representatives of the several divisions.
States of Ohio, Kentucky, Tennessee, Michigan, Indiana, Wisconsin, Illinois, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma.
DISTRICT 3
Headquarters: Houston, Texas
District representatives of the several divisions.
States of Alabama, Mississippi, Arkansas, Louisiana, Texas, New Mexico.
DISTRICT 4
Headquarters: Denver, Colorado
District representatives of the several divisions.
States of Montana, Wyoming, Colorado, Idaho, Utah.
DISTRICT 5
Headquarters: Los Angeles, California
District representatives of the several divisions.
States of Washington, Oregon, California, Nevada, Arizona, Alaska, Hawaii.
DISTRICT INDUSTRY COMMITTEES
To provide the Office of Petroleum Coordinator with the counsel and advice of the industry from the regional standpoint, and to assist in effectuating plans when approved.
(A representative cross-section of industry leaders in each district.)
DISTRICT 1
General Committee
Production Committee
Refining Committee
Transportation Committee
Marketing Committee
Natural Gas and Natural Gasoline Committee
(Topical and regional subcommittees as assigned.)
DISTRICT 2
General Committee
Production Committee
Refining Committee
Transportation Committee
Marketing Committee
Natural Gas and Natural Gasoline Committee
(Topical and regional subcommittees as assigned.)
DISTRICT 3
General Committee
Production Committee
Refining Committee
Transportation Committee
Marketing Committee
Natural Gas and Natural Gasoline Committee
(Topical and regional subcommittees as assigned.)
DISTRICT 4
General Committee
Production Committee
Refining Committee
Transportation Committee
Marketing Committee
Natural Gas and Natural Gasoline Committee
(Topical and Regional subcommittees as assigned.)
DISTRICT 5
General Committee
Production Committee
Refining Committee
Transportation Committee
Marketing Committee
Natural Gas and Natural Gasoline Committee
(Topical and regional subcommittees as assigned.)

Petroleum Rubber Route More Economical Than Alcohol

By HENRY D. RALPH

In this article the Journal continues its program of recent weeks designed to dissipate the mysteries of the synthetic rubber development and to acquaint readers with actual developments in construction programs.

This discussion deals largely with the relative merits of producing rubber ingredients from petroleum and agricultural products. It reveals that while the production of part of the butadiene needs from grain alcohol may be justified as an emergency measure in order to obtain supplies quickly, the advantages in economic production in long-range programs rest with petroleum.

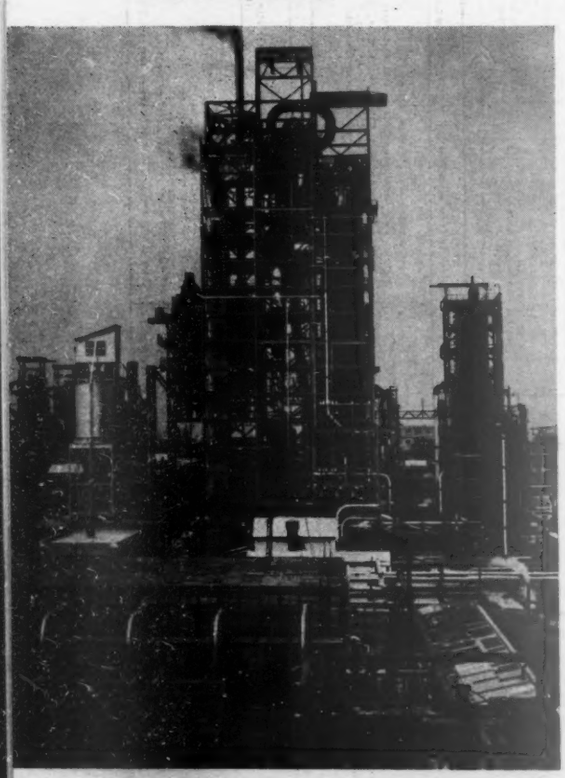
WASHINGTON, D. C.—The cost of producing butadiene from alcohol will be one-third to two-thirds higher than the cost of making it from petroleum under the present program of Rubber Reserve Co., it can be estimated on the basis of information available to the public.

All public information and doubtless much additional data are now being studied by the president's special committee headed by Bernard M. Baruch, and this committee's report is expected to give a more authoritative estimate of comparative costs.

There are many claims and allegations regarding costs of making butadiene by various processes, but most of these are estimates based on paper work, laboratory experiments, or even wishful thinking, and there is very little actual experience with large-scale commercial plants using any process.

Officials of Rubber Reserve estimate that the butadiene from their alcohol plants will cost them about 10 cents per pound more than that from their petroleum plants, but no very definite figures have been made public. Since there is no established price for butadiene by either route it is difficult to make comparisons that are very convincing, but practically all the officials concerned with the rubber program state that the alcohol route will cost somewhat more at present grain prices. Advocates of every process believe that they can get under present estimates when the plants have been operating at capacity for a while, but the oil people feel that their estimates are conservative and inclined to be a little high while the alcohol people may be too optimistic in their cost estimates.

Catalytic cracking unit of the type that will furnish much of the basic hydrocarbons to be used in synthesizing petroleum rubber



The cost of butadiene, however, is not the controlling factor in the decisions of Rubber Reserve to make approximately one-third of its butadiene from alcohol and the remainder from petroleum. The other factors are practicability of the process, speed in getting into production, and amount of critical materials needed in plant construction. On these bases there is virtual agreement that the alcohol route has the edge over the petroleum route. The alcohol process of the Carbide & Carbon Chemical Co., to which has been assigned 200,000 tons of butadiene, has been commercially proved, the construction engineering has been completed for 10 identical 20,000-ton units, and it requires less critical construction material than at least some of the petroleum processes, particularly those first proposed by Rubber Reserve.

Plants for Raw Materials

Other alcohol processes are being studied, and also constant changes are being made in the petroleum processes, so that an exact comparison of critical materials is difficult. Another subject of controversy in such comparisons is whether or not the estimates include, or should include, construction of plants to produce the raw materials—alcohol or grain in one case and butylene, butane, and crude petroleum or natural gas in the other case.

Wright W. Gary, recently resigned as director of refining of the Office of Petroleum Coordinator, was asked by the Gillette committee of the Senate during its investigation of making rubber from grain what it would cost to produce butadiene from petroleum. He replied that estimates of manufacturing costs vary greatly and range from 6 to 16 cents per pound. He explained that the variation in estimates is due to differences in the raw materials used, its availability to the plant, size of the plant, process used, cost of fuel, and rate of amortization, but he said that an average of these estimates probably would be about the right figure.

This checks rather closely with Rubber Reserve's estimate of an average cost of slightly more than 11 cents per pound for butadiene from its petroleum plants.

On the other hand, the operating contract of Rubber Reserve with Carbide & Carbon for its first alcohol plant contains an estimate of 12.61 cents per pound for butadiene with an alternative formula for finding actual cost after production starts. However, the first plant is to be operated on synthetic alcohol supplied by Carbide at prices ranging from 18½ to 26 cents per gallon. Beyond the 18,000,000 gallons of synthetic alcohol, which will produce only about 20,000 tons of butadiene per year, Rubber Reserve must purchase grain alcohol for its nine other Carbide process plants, and the present price of alcohol is around 50 cents per gallon. Harold E. Thompson, vice president of Carbide & Carbon Chemical Co., told the Gillette committee that even with the higher cost of alcohol used in the subsequent plants, large-scale operations and the possibility of increasing the yield might keep the cost of butadiene down to 12.61 cents per pound.

Rubber Reserve's estimates of around 11 cents per pound for petroleum butadiene were made when it was planned to build plants starting with butane obtained chiefly from cracking oil gas. Later the program was switched to use butylene as the charging stock. While this will save much critical material in construction of the butadiene plants it is not known how it will affect the cost of producing butadiene, since there is no established market prices for butylene, and the butylene will be obtained from various sources and processes. The "quick butadiene" program is estimated to cost around 5 cents per pound of butadiene more than the long-range program.

Rubber companies operating copolymerization plants are now buying butadiene from the Shell Oil Co., Inc., at 18 cents per pound. This is produced from butylene in a relatively small plant adjacent to the company's large cracking plant at Houston, Tex., but the Shell process requires 2 lb. of chlorine to produce 1 lb. of butadiene and so is more expensive than the anticipated costs of the processes to be used in the Rubber Reserve plants.

The cost of producing butadiene from alcohol depends chiefly on the price of alcohol, which in turn depends on the price of grain. When the synthetic-rubber program was first under consideration most industrial alcohol was produced from blackstrap molasses, most of it imported, at a cost far below the cost of producing it from grain. When it became apparent that blackstrap might be short and that alcohol demands would be large, the War Production Board undertook a program, now well advanced, of converting whisky distilleries to the production of industrial alcohol, using grain. To make this possible, the Office of Price Administration raised the ceiling price on alcohol to 50 cents per gallon. Most authorities agree that using corn at its current

price of around 85 cents per bushel, the cost of alcohol is between 40 and 50 cents per gallon, and about the same using wheat at its present prices.

Cost Would Be Double

Cy Neuman, president of Publicker Commercial Alcohol Co. of Philadelphia, Pa., one of the largest alcohol producers in the world, said that his company can produce alcohol at present grain prices for between 45 and 50 cents per gallon but said the equipment required for synthetic plants would be 20 times that of grain plants. He admitted that the cost of producing butadiene from alcohol, based on 85-cent corn, would be about double the cost from petroleum, but that there would be a great saving in cost of equipment.

Mr. Neuman ridiculed predictions that alcohol could be produced from grain at 20 cents per gallon by building plants in the grain belt and utilizing all byproducts. He also called "fantastic" estimates made to Senator Gillette by George E. Johnson of Hastings, Neb., that he has a process for producing 8 to 10 lb. of butadiene per bushel of grain and at a cost which would not exceed the petroleum process. The Publicker company has a contract with Butapol Corp., formed by the owners of Polish patents, and is now building a pilot plant to test the Polish process which is being closely watched by Rubber Reserve and WPB. Mr. Neuman said that experiments so far indicate that this process will yield about 2 lb. of butadiene per gallon of alcohol, which would be about 5 lb. per bushel of grain, which in turn would make about 6½ lb. of synthetic rubber per bushel.

The Carbide process, which is quite similar to the Publicker process, yields 2.2 lb. of butadiene per gallon of alcohol. The theoretical yield is 3.8 lb. per gal., so it is quite possible that an increase in yield would reduce the cost materially.

Dr. Leo M. Christensen, research executive of the chemurgy project of the University of Nebraska, told the Gillette committee that the process of making butadiene from alcohol is sound.

"The rubber yield, calculated in terms of the amount produced per bushel, has varied considerably over a period of time," he said. The reports have varied anywhere from in the neighborhood of 5 lb. of rubber to 10 lb. per bushel of corn. The Russians, I think, are fairly satisfied that they can get 5 or 6 lb. of rubber per bushel. The Poles, I have heard, were getting higher yields of rubber, equivalent to 10 lb. per bushel of corn."

Estimates of Dr. Orville E. May, director of research of the U. S. Department of Agriculture and formerly head of the Northern Research Laboratory at Peoria, Ill., are that to make butadiene from alcohol, based on current methods of operation, with corn at 85 cents per bushel the price of butadiene should be in the neighborhood of 21 cents per pound. With corn at 50 cents the price would be around 14 cents, and if corn is put in for nothing the price would probably range slightly under 6 cents per pound. On the basis of 85-cent corn, he said the price of alcohol would be in the neighborhood of 42 cents per gallon, including all costs except profit, and that wheat at current prices would give about the same figure.

Arthur B. Newhall, WPB rubber coordinator, told the Gillette committee: "Rubber made from grain alcohol at 40 or 50 cents a gallon would cost 10 or 15 cents a pound more than through the oil process, or from synthetic alcohol at 25 cents a gallon therefore, if you make 700,000 tons a year and you pay 10 cents a pound more for it, you can save the plant that you have built very easily."

Hope for New Processes

However, advocates of rubber-from-grain programs are not content with present cost estimates, but are hoping that new processes will be discovered which will bring down the costs and will develop a new industry making chemicals from farm products. They reason that present methods of distilling alcohol from grain mash are very wasteful and that research will increase the yields and produce valuable byproducts so that the cost of alcohol can be cut in half.

They also have high hopes for the butylene glycol process of producing butadiene without first making alcohol. This process has been developed jointly by the Department of Agriculture Peoria laboratory and Joseph E. Seagram & Sons, Inc., of Louisville, Ky., and WPB has granted priorities for a pilot plant for further experiments. By this process the grain mash is fermented by special bacteria to produce 2,3-butylene glycol. At present this fermentation gives 90 per cent yield of butylene glycol from dextrose and something like 70 per cent of theoretical yield from corn. There is difficulty in dehydrating the glycol to butadiene, and yields are only 24 to 30 per cent, but a new process of flooding with water into the zone of reaction promises to give yields of 9 lb. of butadiene from 18 lb. of butylene glycol, the amount of glycol obtainable from a bushel of corn. Enthusiasts for this process say that with corn at 85 cents per bushel it will produce butadiene at 8 or 9 cents per pound. The Seagram company claims to have obtained a yield of 8 lb. of butadiene per bushel of corn by the butlyene glycol process in its experiments, and Dr. Christensen reported that his laboratory experiments produced 10 lb. of butadiene from a bushel of corn.

The greatest booster for the rubber-from-grain

(Continued on Page 32)

German Conquest of Caucasus Still a Threat, Not a Fact

By J. P. O'DONNELL

NEW YORK.—Axis armies at the Don River bend in the east and in the vicinity of Armavir on the south are threatening to deprive Russia of her major sources of oil and thereby immobilize the Soviets' mechanized forces. Complete conquest of the Caucasus would achieve that end for the Axis since Russia then would be forced to depend on widely scattered fields with a combined production estimated at only 100,000 bbl. a day and imports from the United States or others of the United Nations. However, despite her successes, Germany can not regard the conquest of the Caucasus as an accomplished fact and the presence of her armies in the advanced positions they now occupy must still be considered as only a threat, although grave.

Even though the Nazi movement south from Rostov is nearer an important oil objective, the drive eastward toward Stalingrad and Astrakhan is potentially the most serious. If this drive succeeds in reaching Stalingrad it will give the Germans complete control of the southern Volga, Russia's most important inland petroleum traffic artery, and if it succeeds in reaching Astrakhan, Nazi planes could dominate the northern Caspian to such an extent as to prevent Baku oil from reaching central Russia through the normal and only adequate channels.

One important destination of Caucasian oil is the Saratov refining center which, before the war, contained Russia's third most important cracking plants. The capacity of these units was then rated at 35,000 bbl. per day. Saratov is located on the Volga and its principal source of charging stock was Baku from which the oil was taken by tanker and barge up the Caspian and then the Volga. Saratov would be isolated from Baku if Russia lost control of the river. The Volga is over 2,300 miles long and, by means of a canal, connects Leningrad with the Caspian.

If the Germans succeeded in reaching Astrakhan, their control over Baku oil would be virtually complete. Baku's only pipe-line outlets are the crude and refined-products lines to Batum on the Black Sea. Nazi dominance of its shores has made that line almost valueless, leaving tanker transportation to Astrakhan and Gurev on the Caspian the lone outlets of any size. Gurev is the origin of the 435-mile pipe line terminating at the Orsk refinery. It is approximately 180 miles from Astrakhan and could be completely dominated from the air if the Nazis took Astrakhan. Since the Caucasus produces more than 80 per cent of all Soviet oil, it is obvious that the control which Germany would gain with a successful drive to Astrakhan would constitute a serious blow to Russia.

At the time of writing, the Germans claimed that their drive south from Rostov had reached Maikop, center of the Kukan fields, and Krasnodar. Regardless of the claims, loss of the Kukan fields, reported to be producing some 40,000 bbl. per day and the 25,000-bbl.-per-day refinery at Krasnodar would not be a vital blow to Russia. If these oil objectives are lost it is probable that Taupse, Black Sea terminus of the Daghestan-Grozny pipe line and site of a 35,000-bbl.-per-day refinery, would be lost also. The proven Soviet scorched earth policy will also render them valueless to their captors.

Grozny Still 300 Miles Distant

Grozny, the next oil objective of the Caucasian invasion, is another 300 miles distant from Maikop and Baku, the main Russian oil center, accounting for 73 per cent of the nation's crude production and 60 per cent of her prewar refining capacity, is still another 300 miles away. In addition it is protected by the almost impassable mountain range that crosses the Caucasus from the Caspian to the Black Sea. Germany therefore still has a long way to go before acquiring control of the principal Soviet oil areas. Even if they are captured, it is certain that they will have been demolished so thoroughly that it will require many months to restore them. If Germany must acquire Russian oil to survive, her survival is doubtful for she must first extend her conquests considerably and then surmount major problems in transportation and utilization.

In view of the threat to the Caucasus, it is probable that the Soviets are not only speeding the development of the Ural-Volga and Emba basin fields but are also piling up as much storage as possible of oil from Baku in central Russia. If she succeeds in delaying the conquest of her main oil fields and refining centers or maintaining some degree of control over the Caspian and Volga transport routes, it is improbable that she will be defeated this year for lack of oil.

STATE CAPITALS...

Allowable Increased in 40 Texas Fields to Aid War Program

AUSTIN, Tex.—Following a special state-wide hearing August 7, the Railroad Commission has amended its August proration schedule, authorizing increased production in 40 fields totaling in excess of 94,000 bbl. daily. Fields in which the increases have been granted are those producing special types of crude needed, it was stated, "to run to full capacity refineries making war products, such as aviation gasoline, toluene, lubricating oils and waxes." Increases are in line with petitions for adjustments in the August schedule made by Humble Oil & Refining Co. and other companies, supported by recommendations from the Office of Petroleum Coordinator. No reductions were made in any field.

Announcing the action of the Railroad Commission, Ernest O. Thompson, chairman, stated that "the plants turning out these products have been assured of transportation priorities and the commission is determined to see to it that no defense or war industry shall be short of crude petroleum of any type produced in Texas.

"It is apparent," he said, "that Texas is going to have to supply an ever-increased percentage of the nation's oil needs. We have 55 per cent of the nation's oil reserves and are presently supplying less than 40 per cent of the production. Since states like Oklahoma, Illinois, Kansas and California do not seem to be able to produce the oil they heretofore have been producing, Texas is going to have to produce more oil. Last week these states withdrew from storage 1,000,000 bbl. of crude to meet their demands. This cannot go on for long."

Olin Culberson, member of the commission, pointed out that the increases met all requests for critical war materials, and explained that although the revised order would appear to exceed the original OPC recommendation for production for August, the over-all production picture for the month, considering marginal allowances previously granted in certain districts and underages incurred by pipe-line proration in some fields, would be slightly under the federal agency's estimates. August production previously certified by OPC for Texas was 1,396,700 bbl. daily.

Outright increases in allowables were authorized for four fields, as follows: Tom O'Connor, 22,929 bbl. to 51,536 bbl.; Henderson, 4,200 bbl. to 6,341 bbl.; Talco, 24,854 bbl. to 31,500 bbl. and Thompsons, 12,024 bbl. to 20,064 bbl. Increases by lifting all shutdown days, effective August 8, were granted Greta Deep, Heyser, Mellon Creek, Refugio-Fox, Conroe, Raccoon Bend, Cotton Lake, South Cotton Lake, Hastings, Turtle Bay, Magnet-Withers, South Thompsons, Manvel Oligocene, Plymouth, Rincon, Eastland County, Erath County, Loving, Yates, K.M.A.-Ellenburger, Hults-Owens, Joy-Mississippi, and Antelope. All shutdowns, except those for August 8, 9, 15 and 16, were ordered lifted for Lolita, West Ranch, Lovell's Lake, Amelia, Sugarland, Clear Lake, Webster, Conoco-Driscoll, Wade City, Orange Grove, Walnut Bend and Bonita.

Most of these fields are in the Gulf Coast and South Texas.

The special hearing was held in response to a petition by Humble Oil & Refining Co. which claimed that the original August proration allowables in Texas fields had shown disregard of refinery requirements as expressed in purchaser nominations, and that as a result, a serious decline in manufacture of materials necessary for the war program was threatened. It was stated that the order had left the company "sadly deficient in oil essential to the manufacture of war products and seriously oversupplied with oil, such as the high-gravity, low-octane oil produced in Southwest Texas and in West Texas, used principally for the production of motor gasoline for which demand has declined rapidly."

At the hearing, this company specifically asked allowable increases for 19 fields, all in the Gulf Coast and South Texas. The requested increases totaled 57,198 bbl. daily to bring the total allowable for these fields to 176,159 bbl. Lending support to Humble's requests and claims, a telegram from Ralph K. Davies, deputy petroleum coordinator, certifying the need for production increases in certain fields, was read at the hearing. The telegram stated:

"Certain refineries making war products will not receive sufficient crude of proper types and grades under allowables set by your commission for the month of August to maintain maximum output of war products as specified by my directives. In order to meet requirements of these plants, I hereby certify that production of the following fields on a calendar basis for the month of August should be raised to the amounts indicated. . . ."

This certification listed 17 fields. Most of these fields were the same as those on the Humble list, but each list contained some fields not on the other. It was pointed out at the hearing that although the schedule of suggested allowables as filed by Humble did not coincide in its entirety with the OPC suggestions, approximately the same result would be obtained. Increases asked by OPC for the 17 fields totaled 61,808 bbl. with total daily allowable of these fields to be 176,180 bbl.

Fields in which allowables were increased included all those requested by Humble and certified by OPC, and in addition other fields in which comparable types of crude are produced. The increases by districts are: Gulf Coast, 42,225 bbl.; Southwest Texas, 27,309 bbl.; East Texas, 6,646 bbl.; North Texas, 3,605 bbl.; West Central Texas, 914 bbl., and East Central Texas, 865 bbl.

COLORADO COMPACTER . . .

DR. F. M. VAN TUYL

When the Research and Coordinating Committee of the Interstate Oil Compact Commission was organized in December 1941, Governor Carr of Colorado designated Dr. F. M. Van Tuyl, professor and head of the department of geology of the Colorado School of Mines at Golden, Colo., as the Colorado representative. Dr. Van Tuyl, born in Denmark, Iowa, in 1887, received his B.A. and M.S. degrees at the University of Iowa. After doing graduate work at University of Chicago, "Van" went further eastward to obtain his Ph.D. degree at Columbia University in 1915. In 1917 he became affiliated with the Colorado School of Mines and has served in his present position since 1919. In the last World War he enlisted in the U. S. Army Aviation Corps and was captain in the Engineers O.R.C. from 1923 to 1933. Dr. Van Tuyl is intensely interested in furthering oil exploration on a scientific basis in eastern Colorado

CALIFORNIA

THE SAN FRANCISCO office of the U. S. Engineers is asking the oil industry to submit second-hand tanks suitable for use in bulk storage of aviation gasoline and lubricating oil at air corps stations. These tanks will be purchased and the need is urgent. This would tend to indicate that the demand for aviation gasoline on the Pacific Coast can be expected to show a substantial increase later this year especially when many of the men now being trained get into the air. This will necessitate stepping up the production of fields producing the necessary base materials and may result in a substantial increase in stocks of low-grade gasoline.

CALIFORNIA OIL PRODUCTION schedules for August submitted by the Production Committee for District 5 have been approved by the Office of Petroleum Coordinator and have been mailed to all producers. The schedules allocate 726,200 bbl. per day of crude-oil production compared with 699,400 bbl. in July.

NEW MEXICO

THE UNITED STATES Senate subcommittee on mineral resources will hold a hearing in Artesia, N. M., August 25, on the problems confronting independent oil producers. This will be the second of several such hearings to be held in areas most affected by the present adverse conditions faced by independent oil operators.

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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Supplies and Suppliers

As oil operators, manufacturers and suppliers, and representatives of war agencies discuss immediate and long-range policies pertaining to future materials and equipment for this industry, several facts stand out in the confusion that has developed.

It will be a serious mistake to adopt any plan which will materially decrease the supplies now in the hands of producing organizations. The thought back of the government proposal is that the use of new materials can be reduced to a minimum by drawing on whatever inventories the producing branch of the industry has. As expressed by one war-agency representative, "oil operators should not expect new supplies until they pool and use what they have."

A little study should reveal to every one concerned how short sighted such a program would be. It would mean that producers would continue the restricted operations of the past few months for a short period and then suddenly discover they did not have the tools to carry on additional operations.

No one challenges the statement that the petroleum industry must maintain proven oil reserves in excess of immediate requirements. It is even more important that there should be at least normal stocks of essential materials and equipment with which to find and to operate new fields. War doesn't change the accepted peacetime practice that industry at all times should have supplies on hand to meet the usual and extraordinary operating requirements. In the case of an essential industry war emphasizes the necessity of this operating procedure.

After 8 months, it is now certain that the war demands for petroleum in this country, despite rationing, will not be reduced greatly under the prewar levels of last year. Curtailments in consumption of some fractions of petroleum have been largely offset by the expansion in the demands for others. There are many new uses.

Furthermore, no one can read the daily reports from the war fronts without being concerned as to what may happen before the end of the year to the oil supplies of the Eastern Hemisphere now controlled by Allied powers. There is the possibility that the oil producers in this country shortly will be called upon to find and bring to the surface more oil than ever before.

This is not the background which justifies depleting the fields of their inventories. Rather every consideration should be given to a program of seeing that materials extending from the manufacturing plants to the field warehouses, are sufficient to support peak operations for an extended period. There is no war-production need of greater importance.

Another thought closely allied to the first is that any distribution of materials now owned by operators should be done by existing supply companies.

These organizations and their manufacturers are an integral part of the oil industry. They initiate and perfect new devices and operating methods which in a large measure account for this industry's present operating efficiency. Their sales and engineering services extend to every field. They are major factors in financing new and established operations.

These suppliers are maintaining their organizations and services through this curtailment period. They alone have the facilities and personnel to carry out any redistribution of materials and equipment within the industry that is deemed necessary.

While some have offered to do this at less than cost there is no reason why suppliers in taking over this emergency job, should not be allowed the customary operating margins of their business. It is vitally important that these resourceful and competent units be given every consideration in projecting future war plans.

Systematic Scrap Collection Greatly Increases Yield

By T. P. SANDERS

SCRAP collection must be an assembly-line proposition if its final objective is to be realized. This is the considered opinion in all major oil companies where scrap has been given the attention it deserves.

Success of a scrap campaign within an operating company means the delivery of all available metals with the least possible distraction from day-to-day activities. Unless the gathering of scrap can be made easy for every worker, either the regular work or the work of collection must suffer.

The systematized drive assures that each leaseman will have a convenient place to deposit the scrap he uncovers in the course of his daily work. This can be considered the first essential of a successful campaign, for without it the leaseman will either waste time looking for a place to leave the scrap, or he will leave the material where he sees it, intending to do something about it later.

Magnolia's Collection System

An outline of a scrap-delivery system from lease to market as developed by a major producing concern (Magnolia Petroleum Co.), should be helpful to other organizations in studying their salvage systems. Unlike many oil companies, Magnolia believes in classifying and segregating the scrap before it is sold. Handled in this manner, the scrap brings a better price and sales are expedited.

At each Magnolia lease there is at least one scrap pile. On small leases with settled production a spot is designated near the tool house, while larger leases have several accumulation points located at the places of most prevalent activity. Each drilling well has its own scrap pile in order to curb the long-established practice of throwing such articles as broken valves into the slush pits.

No special trips are made by trucks or cars to take scrap accumulated on the leases into the district junk yard. Also, there is no inclination to wait for a full load before the lease scrap pile is removed. Every time a truck with no load or with partial load is to return to the district headquarters it picks up whatever scrap is available and delivers it to the junk yard.

Segregation of discarded materials is carried on as the trucks are unloaded at the junk yard. Each Magnolia junk yard is laid out so that the trucks can be unloaded in the center and each piece of metal can be placed on its appropriate pile nearby. No fence is used around the yard as this would require essential materials.

Classification of scrap is kept simple so that no special metallurgical ability is required to make proper separation of a truck load from the leases. All junk pipe in lengths over 9 or 10 ft. is piled at one end of the yard. Old sucker rods, or other rods of some length suitable for concrete reinforcing, are stacked at another side of the yard. Steel scrap, such as short lengths of pipe and pipe fittings, is piled at still another side of the yard, while cast steel and cast iron is placed at the remaining side of the yard.

Segregation of cast scrap from common scrap is believed to be an economical undertaking for the oil company because the cast material brings a price of about $5 more per ton than the common scrap. However, little time is devoted to breaking down scrap pieces composed of both metals. The piece is simply thrown into the pile represented by its main bulk.

The more precious metals (brass, copper, aluminum, and babbitt) are kept in a barrel in a warehouse under lock and key. Since the quantity is usually small, these metals are not separated until they are sold.

With the junk yard maintained in orderly fashion, a better price can usually be expected for the discarded materials. Both buyers and sellers can see what is on hand and can appraise its value. Since little time is required of the buyer, it becomes proper to obtain more than one bid.

It has been the policy of Magnolia Petroleum Co. to sell all discarded metal at prices well below the price ceilings. This is done in recognition of the fact that the junk dealers must cut all junk pipe into 5-ft. lengths, must sheer and bundle all discarded wire rope, and otherwise prepare the material for shipment to the mills. Unreasonably high prices, it is believed, encourage the dealer to seek a market for some of the junk as used equipment instead of shipping it to the mills as scrap.

Reconditioning Usable Material

The necessity of retaining usable equipment and parts is recognized by all concerns. Since very few new materials can be obtained, the greatest problem of any scrap campaign lies in deciding what is to be retained for possible future use. That this same problem exists in all industries was demonstrated recently in a Kansas City roundhouse when an oil locomotive that had made its last run in 1922 was reconditioned and put into service.

An example of the assembly-line scrap system is seen in a recent case where an old engine on a Magnolia lease broke its bed plate. Since it is so uneconomical to rebuild an old engine in this condition, the machine was hauled to the junk yard by the first large winch truck making a return trip from other work. At the junk yard the flywheel, governor, igniter, and other usable units were removed. Then the brass and babbitt bearings were knocked out to be sold with the precious metals. The crankshaft, being battered, was placed in the steel-scrap pile, but other moving parts were held for possible replacement use. The cast base, block, and head were placed on the cast-scrap pile. Most of these pieces were of such size that they could be classed as cupalo cast. No attempt was made to break up the larger pieces as this work is more easily accomplished at the mill where power hammers are available.

Salvage of old buried lease lines is being carried on more extensively, for it is found that most lines contain enough good pipe to pay for the salvage work. Magnolia Petroleum Co. usually employs company forces to recover any line made up of 4-in. pipe or larger, but smaller sized lines are sold in the ground to salvage operators whose labor costs are lower. It has been recommended in some quarters that pipe locaters should be employed to find long-abandoned lease lines that could be salvaged for scrap.

One thousand tons of steel scrap will be added to the nation's scrap pile as soon as wreckers complete the demolition of the Atlantic Refining Co.'s old asphalt plant at its Point Breeze refinery in Philadelphia, Pa. Part of the job has been done already, as photo shows. The tops have been cut from this bank of stills and eventually the entire unit, which was built in 1916, will be ready for use in manufacture of tools and munitions

Financing of East Texas Salt Water Disposal Plan Complete

By ROBERT INGRAM

DALLAS, Tex.—Financing of the East Texas Salt Water Disposal Co. was completed last week and steps were being taken for reorganization of the company under its increased capital stock. A total of $2,000,000 had been subscribed by 247 operators in the field.

Success of the capitalization cleared the way for election of a board of directors and the inauguration of a field-wide brine-injection program, which is expected to be under way within a few months.

The disposal program, undertaken to do away with problems of stream pollution and also to prevent decline in bottom-hole pressures at producing wells, will, according to engineers' estimates, result in ultimate recovery of between 200 and 800 million barrels more oil than otherwise expected. Since excessive pressure declines have also threatened the rate of production ("alarming" declines were halted in March under restricted allowables), the program will also assure a steady rate of production for wartime demands.

Salt-water production in the field also has a direct bearing on the recovery of crude and has many economic and conservation aspects. The ultimate oil recovery as related to salt-water production was summed up by Bryan W. Payne, president of the East Texas Salt Water Disposal Co., in a paper presented May 12 before the East Texas chapter of the American Petroleum Institute, at Kilgore, Tex.

Said Mr. Payne: "It is now well known that East Texas is a water-drive field. It was inevitable therefore that in East Texas, as in other fields of this type, large volumes of salt water would be produced along with the oil long before final depletion of the reservoir. Until recently it had been less well appreciated except by engineers and technologists, that since salt water under pressure constitutes the driving force that moves the oil from the sand to the well bore, it is of paramount importance that the water pressure in the reservoir be conserved and utilized in such a way as to yield the greatest ultimate recovery of oil."

Field-Wide Basis

Recognition of this scientific fact in a field controlled by some 800 operating interests, however, amounted to little more than a small beginning. Big job was to organize a project on a field-wide basis to reinject the brine produced with the oil. Isolated injection systems were unsatisfactory except as a stopgap measure and were not sufficient to affect the field as a whole.

Nonetheless, individual concerns took steps as long ago as 1938 to conserve and utilize the water pressure by reinjecting brine into the producing sand. Other stopgap measures were taken last spring when a pressure decline of more than 15 lb. in January caused OPC Director Harold L. Ickes to take public notice of the situation which he described as "alarming." These measures, however, were incidental to the formation of a field-wide salt-water-disposal program which had been got under way in November 1941.

The Railroad Commission in December issued an order, effective January 1, 1942, in which the additional allowable of 1 bbl. of oil for every 50 bbl. of salt water returned to the sand was granted. Two months later the commission issued another order, designed to hasten the shutting in of marginal wells producing large volumes of salt water, in which the transfer of the additional allowable granted by reason of the return of water to the sand, could be transferred to leases other than the one on which the water was produced. The order also permitted wells producing more than 100 bbl. of salt water per day to be shut in and the allowable taken from other wells on the same lease.

New injection plants are to be constructed, and the present systems will be meshed into a field-wide system calling for a total of 85 injection wells with a potential injection capacity of 190,000 bbl. daily. (For details of the program, see The Oil and Gas Journal, Dec. 11, 1941, p. 34; Dec. 18, 1941, p. 24.)

The East Texas Salt Water Disposal Co. had its beginnings in the East Texas Salt Water Disposal Group, organized at a meeting in Dallas in November 1941 of operators in the field. This meeting was called to discuss the commission's order giving the bonus allowable for injection of brine and also to consider plans for a community field-wide system. At this meeting the federal Government threw its support to such a plan through E. DeGolyer, director of conservation in the OPC, who expressed much interest in the plan and strongly urged immediate action.

The plan is to be entirely voluntary, it being optional to the owners of the systems already in operation as to whether they sell to the new company. It was also to be optional to the operators of producing properties as to whether they take part in the project.

The company expects to acquire the 13 injection plants already in operation as one of its first corporate acts. Engineering surveys have been under way for several months, these plants already in existence have been under study, and their excess capacity will be put to use as soon as possible. Also, the company has already applied for priorities for necessary materials for new plants and wells to be incorporated into the system and will start these as soon as the way is cleared.

The company was formed at a meeting on January 8, 1942, when the group organized the East Texas Salt Water Disposal Co., a Texas corporation with a capital stock of $25,000 to which 12 individuals subscribed.

Mr. Payne was elected president of the corporation, D. R. Gladney vice president, and J. G. Pew secretary-treasurer.

Depletion Allowance Expected To Get Senate Approval

WASHINGTON, D. C.—Retention of the 27½ per cent depletion allowance in taxation of oil and gas properties was urged by Senators Elmer Thomas and Josh Lee of Oklahoma at a hearing by the Senate finance committee on the Treasury Department's annual tax bill which proposes a change in the basis of taxation to a cost-depletion method. Senators Thomas and Lee were supported in their arguments by former Sen. T. P. Gore of Oklahoma, representing the Mid-Continent Oil and Gas Association and the Independent Petroleum Association of America.

All three declared that the Treasury Department's proposed change in the 27½ per cent depletion allowance would handicap the oil industry and discourage the exploration and development of new petroleum reserves, and expressed the opinion that it would be suicide for the Government to adopt any measure that would tie the hands of the oil and gas industry at this time, when, if Hitler should gain control of the oil of the Caucasus and Middle East, this country might be called upon to supply all the oil the United Nations will need.

"We must not take any steps that will reduce the development of new supplies of oil," Senator Lee argued. "We must not discourage exploratory efforts. On the contrary, we must be thinking of means of encouraging the discovery of new oil fields."

Senator Lee pointed out that although the oil industry had not profited excessively as a result of the depletion-allowance law, it had been encouraged by the wisdom of a governmental policy which encourages the search for new reserves. He questioned the claims of the Treasury Department tax advisers that the depletion allowance is a special privilege and a tax loophole.

"The depletion allowance," Senator Lee stated, "has a twofold base. First, because of the difficulty of ascertaining what amount of oil has been found in a well that is discovered, it is recognized that every barrel of oil sold might be a part of the capital invested in that endeavor.

"Second, it is also recognized that any of the efforts to find the oil, although very expensive, might prove fruitless. Therefore, by allowing a depletion of 27½ per cent, Congress has established a fair and just formula for dealing with the oil industry."

Had Start in World War I

It was brought out that the present depletion allowance legislation had its inception during the first World War, being initiated as a matter of necessity growing out of a situation similar to the one faced today. It was emphasized that the policy has been an important part of the present tax program, and is deeply embedded into the fundamental structure of the petroleum industry.

Former Senator Gore, who was one of the sponsors of depletion allowance principle in 1918, pointed out that "every gallon of oil and every ton of ore" removed from the ground depleted the owner's capital, and contended that the Government wisely put the depletion allowance into effect to provide the incentive for development of natural resources.

"Oil prospecting involves tremendous financial hazards," he said. "In order to continue prospecting for new resources we must leave the money to pay the costs of exploration and discovery activities in the industry."

After the hearing by the Senate finance committee, observers expressed confidence that a favorable report would be given and that the Senate would follow the House in voting to retain the depletion allowance.

Blanket Exemption to M-68 Given Smackover Field

WASHINGTON, D. C.—The Smackover oil field in southern Arkansas has been given a field-wide exemption to the well-spacing regulation of Conservation Order M-68 through action of the director general of operations for the War Production Board on recommendation of the Office of Petroleum Coordinator.

This is the first field-wide exception to be granted, but does not necessarily set a precedent, since it involves no new drilling but only plugging back wells to shallower horizons. Other field-wide exemption proposals involving new drilling are pending before OPC, particularly one to permit new wells in California heavy-oil fields, but no decision has been reached.

Under the field-wide program of action now possible, the producing lives of many wells will be prolonged and the ultimate recovery of oil from the field substantially increased.

The authorization does away with the necessity for each operator applying individually for an exception to Conservation Order M-68 to permit the use of materials required for recompletion operations. As more than 3,700 wells had been completed in the Smackover field by the end of 1941, this procedure would have involved considerable delay and expense, as well as some loss of production.

The application for a field-wide exception to M-68 was initiated by the Arkansas Oil and Gas Commission. It is the first case on record in which a state agency has held a field-wide hearing, assembled evidence, and then prepared an application for exception in behalf of all the operators in a field. The OPC strongly favors such procedure wherever practicable.

Need for a plugging program in the Smackover field arises from the fact that many of the wells producing from the lower zones are making so much water that they are no longer economical to operate.

The order will permit all operators in the field to plug back to higher producing zones at will and recomplete wells so that the recoverable oil remaining in such zones can be produced from existing wells.

Eastern Prices Decrease; RFC Absorbs Abnormal Haulage

WASHINGTON, D. C. — Maximum gasoline prices along the eastern seaboard were reduced 2½ cents a gallon on August 5. Simultaneously, reductions of 0.9 cent per gallon for kerosene, 1.1 cents a gallon on distillates and light heating oils, and 15 cents per barrel on residual fuel oils were made.

These reductions were made possible under an arrangement recently completed between the Office of Price Administration, the Office of Petroleum Coordinator and the Reconstruction Finance Corp., whereby the Reconstruction Finance Corp., through Defense Supplies Corp., an RFC subsidiary, will absorb the abnormal transportation costs involved in moving petroleum products from the Gulf Coast and inland points to the Atlantic seaboard.

These abnormal costs have compelled special increases in the price of certain petroleum products since last January.

The following table lists the product, the total amount by which prices have increased since last January, and the reduction now ordered effective as of August 5:

Product—	Total amount of increase (cents/gal.)	Reduction now ordered (cents/gal.)
Gasoline	3.7	2.5
Tractor fuel	2.6	1.1
Gas-house oils	2.6	1.1
Distillate diesel fuel oil	2.6	1.1
Nos. 2, 3 and 4 fuel oils	2.6	1.1
Kerosene	2.4	0.9
Range oil	2.4	0.9
No. 1 fuel oil	2.4	0.9
Residual fuel oils (cents/bbl.)	45	15

In addition the amendments reduce the maximum tank-wagon price for No. 2 fuel oil to 9.1 cents per gallon in the Washington, D. C., tank-wagon area.

Heat Exchangers Placed Under System of Complete Allocations

WASHINGTON, D. C. — Heat exchangers, urgently needed in war industries and by the Army, Navy, and Maritime Commission, were placed under a system of complete allocations last week by order of the director general for operations of the WPB.

Heat exchangers are used to exchange heats between liquids and gases in industrial, Army and Navy and maritime work. Requirements of the war program have put a severe strain on existing supplies, since they use considerable quantities of scarce metals.

The order (L-172) prohibits the placing or acceptance of orders for heat exchangers covered by the regulations unless specific authorization is granted by the director general on Form PD-615A. Application for authorization to place orders must be made on Form PD-615.

Manufacturers with whom orders authorized by the director general are placed must accept such orders, unless the person seeking to place the order is unwilling or unable to meet regularly established prices and terms of sale or payment.

In addition, regardless of any prior commitment or preference rating, manufacturers are prohibiting, beginning 15 days after the date of the order's issuance, from delivering any heat exchangers unless authorized by the director general under a set procedure involving the filing of reports by manufacturers showing heat exchangers available for distribution and orders on hand.

Heat exchangers listed in manufacturer's reports as scheduled for delivery on or before August 31 may be delivered without specific authorization after WPB has received the reports. However, the director general may revoke such automatic authorization at any time.

In order to obtain permission to make delivery of heat exchangers not scheduled for delivery befor August 31, manufacturers must file application on Form PD-615B on or before the twenty-fifth day of each month.

Most States Have Cooperated Fully in Production Rates

WASHINGTON, D. C. — That most of the oil-producing states have cooperated excellently in adjusting their production rates to conform with the national wartime production schedules is revealed in an analysis of the situation announced by Ralph K. Davies, deputy petroleum coordinator.

Although a few states have consistently and substantially exceeded the certification of oil-production rates issued monthly by the Office of Petroleum Coordinator, other states, including Oklahoma, Illinois, Colorado, West Virginia and Nebraska, have been unable consistently to produce as much as the certifications call for, the analysis showed.

In Illinois and Oklahoma, particularly, it was indicated, the rates of production have been declining because of the lack of discovery of important new fields and because of the natural decline in productive capacity of the fields presently being produced.

JUNE PRODUCTION

	Production—Actual	Production—Excess	% over allowable
District 1:			
New York	447,000	.....	...
Pennsylvania	1,554,000	24,000	1.57
West Virginia	444,000	*90,000	*16.85
Total	2,445,000	*66,000	*2.63
District 2:			
Illinois	8,652,000	*972,000	*10.1
Indiana	606,000	39,000	6.88
Kansas	8,127,000	*330,000	*3.9
Kentucky	420,000	30,000	7.69
Michigan	2,004,000	111,000	5.86
Nebraska	111,000	*12,000	*9.76
Ohio	312,000	9,000	2.97
Oklahoma	12,099,000	*999,000	*7.63
Total	32,331,000	*2,124,000	*6.22
District 3:			
Arkansas	2,289,000	30,000	1.33
Louisiana	9,807,000	468,000	5.01
Mississippi	2,493,000	1,017,000	68.90
New Mexico	1,965,000	*453,000	*18.74
Texas	41,628,000	9,570,000	29.85
Total	58,182,000	10,632,000	22.36
District 4:			
Colorado	204,000	*24,000	*8.93
Montana	666,000	*36,000	*5.13
Wyoming	2,814,000	*72,000	*2.49
Total	3,684,000	*132,000	*3.45
District 5:			
California	20,676,000	*81,000	*0.39
Total U. S.	117,318,000	8,223,000	7.54

*Less than allowable.

Petroleum Rubber Route More Economical Than Alcohol

(Continued from Page 27)

idea is Dr. William J. Hale, formerly with Dow Chemical Co. and now president of the National Agrol Co., the chief promoter of the fuel alcohol scheme a few years back. He estimated the cost of synthetic alcohol from petroleum ethylene at 13 cents per gallon and the cost of butadiene from the accepted petroleum process at 16 cents per pound, but he told the Gillette committee he could beat both those costs with a little experimenting.

He declared that Atchison Agrol Co. is now making 6,000 gal. of alcohol daily at 34 cents per gallon from corn at 83 cents per bushel but will soon start a new process which will reduce the

cost of alcohol to 23 cents, and that within 2 years it will make alcohol from farm products at less than 10 cents per pound. The butylene glycol process, he claims, will produce butadiene at 5 or 6 cents per pound.

Recently OPA removed the price ceiling on alcohol going into synthetic rubber, having previously lifted the ceilings on other synthetic-rubber ingredients. This may indicate that some of the alcohol to be made from converted whisky distilleries cannot be made at 50 cents per gallon. On the other hand, there are complaints that the 50-cent ceiling is unnecessarily high and that alcohol can be made much cheaper than that if the grain is not shipped to the converted distilleries on the Atlantic seaboard.

Quantities of critical materials used in the various butadiene processes are also difficult to compare, partly because both the designing engineers and Rubber Reserve Co. treat these estimates with a considerable degree of confidence, and partly because there seems to be no agreed basis for making comparable estimates. Some of the estimates claim to include all materials needed for offices, laboratories, sidetracks, and other appurtenances, while some other estimates apparently are only for the bare plant; also, some estimates of materials include equipment needed to produce raw materials, while others are only for the plants to convert the materials into butadiene.

Because Rubber Reserve Co. estimated that it would cost around $650,000,000 to construct capacity to produce 700,000 tons of synthetic rubber, some persons have jumped to the conclusion that it will require an investment of $100,000,000 in equipment to produce 100,000 tons of butadiene from petroleum, and have compared that with an estimate of Mr. Neuman of the Publicker company that he could build a plant to make enough butadiene for 100,000 tons of rubber per year out of alcohol at an investment of $10,000,000.

It should be pointed out, however, that the $650,000,000 is an estimate for the entire rubber program, including the copolymerization plants and styrene plants as well as the butadiene plants, and also something for butyl rubber and neoprene. A breakdown of how Rubber Reserve is allocating this fund has never been made public. In making his estimate Mr. Neuman pointed out that to make butadiene for 200,000 tons of rubber per year would require two $10,000,000 plants plus $6,000,000 for new equipment to convert distilleries to make high-proof alcohol, and that for every additional 100,000 tons of butadiene it would cost an additional $10,000,000 to construct new grain-alcohol plants beside the additional butadiene plant.

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Operators Oppose Several Features of Materials Plan

(Continued from Page 24)

point out they will be losing money as the break-even factor for most companies in the supply business runs from 12 to 17 per cent.

The OPC plan, as explained by Mr. Huff, embodies an almost complete inventory of all equipment on hand, the setting up of centrally located inventory agencies, and the maintenance of perpetual inventories. Oil companies and supply companies would have access to this inventory for determining where equipment was available.

The alternate plan calls for a decentralized control system with a committee from the supply companies maintaining lists of available equipment in the hands of operating firms as well as their own stock inventories. The decentralization of control was emphasized by several men at the meeting in Tulsa, pointing out that when one central agency was used, the inventory was always so out of date that it was useless. One representative of a major company, with 15 years in inventory work, added that he believed subdistrict offices would be of more value than district offices for large areas.

The supply-company committee would handle the details; work out the necessary forms; the procedure for consolidation of the data; the accumulation of costs of the operation; recommend the handling charge, and develop the data required by OPA.

Requirements a Problem

There are numerous problems remaining to be threshed out. One is to what extent the inventory should go and the other is the determination of requirements for the ensuing quarter. The men in the oil industry want to keep it as simple as possible and still satisfy the requirements of OPC and WPB for information needed by them. Whether this will include only the major items or items down to a certain value is not yet known. It is believed that about 15 major items will be sufficient at this time.

The principal problem in estimating requirements is the uncertainty due to a lack of an announced plan by OPC or WPB for the oil industry to follow. A further general restriction on drilling or a relaxation of present restrictions would change the picture entirely. A request by OPC for further development in one area because of quality or quantity of the oil or the location of the field would likewise upset any forecast. At present, leaders in the industry feel that 90-day stocks should be considered as normal requirements and all over that as excess.

Present Material Situation

Actually, at present there are a number of companies who do not have sufficient material to satisfy their requirements for 90 days and it is believed that once the contemplated inventory is made, WPB and OPC will find that for the most part there has been a general overestimation of the amount of material lying idle. Some companies do have an excess of a few items and a general shortage of others; a few companies have generally large and complete inventories but where they are excessive they are trying to work them off.

Oil companies having excess stocks got in their present inventory position not from a desire to build a hedge against an equipment shortage so much as through overestimating the amount of new development work they would be allowed to do. This year would have seen an all-time peak in drilling activity had not M-68 knocked out three-fourths of the wells. In preparation for the wide-open drilling campaign large orders for equipment were placed.

One oil company, as soon as M-68 was issued, took stock of the situation and advised all its men to quit purchasing all items until part of this inventory of material was worked off. This company has reduced its inventory until now it has no surplus material. Some indication of the equipment situation will come from the sampling survey now being made among a selected group of oil companies on materials on the WPB critical list. Actually, no oil company wants to carry a large inventory, one executive said, because of the investment required, the expense of caring for it, the toll of obsolescence and actual physical loss. The preferred procedure is to keep enough material on hand to prevent any shutdown and to order far enough ahead so a continuous stream of supplies is forthcoming from the supply houses.

Greater problems in the industry than a redistribution of present inventories are a supply of new material with which to keep present wells in operation and to carry out the development of reserves as desired by OPC, and the prevention of raiding of oil-company supplies by outside industries. Some operators want assurance that after the inventory of present stocks is compiled, it will not be subject to withdrawals by outsiders under the WPB regulations.

Principal fear of both the suppliers of equipment and the oil companies is that when present material is exhausted there will be no more immediately forthcoming. Most of the factories that normally supply oil-field equipment are now engaged in manufacturing war items. If they can be permitted to make small amounts of needed oil-field equipment as they go along, or can use the interim period between war contracts to manufacture such items, the organization and the "know-how" will not be lost and the production of oil-field goods can be expanded on fairly short notice, according to one supply man. If, on the other hand, they are barred for a period of time from making such items, it will take a period of approximately 6 months to get to the point where a reasonably complete supply of necessary equipment could be developed. During such a period, considerable amounts of valuable and essential oil production would be lost.

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DEATHS

J. E. MOORHEAD, 53, executive manager of the Pennsylvania Grade Crude Oil Association, Oil City, Pa., died Sunday at a Washington, D. C., hospital. He had been taken ill 2 days before with an abdominal trouble, and had been rushed to a hospital. He was scheduled to testify Monday before the Senate finance committee on the depletion allowance. Mr. Moorhead was a native of Arkansas. His early business years were in the newspaper and advertising businesses, and he served as advertising manager for both Marland Oil Co. and Continental Oil Co. He joined the Pennsylvania Grade Crude Oil Association in 1933, and a year later was named executive secretary. He was a Mason, an officer of the Venango County Tuberculosis Society, and was active in civic affairs in Oil City. He is survived by his widow, two sons and two daughters.

FRANK P. JONES, 53, credit manager for the Kansas-Nebraska district of Halliburton Oil Well Cementing Co., died at his home in Wichita, Kans., last week, following a heart attack. Prior to his connection with Halliburton 2 years ago, Mr. Jones had been associated with several oil concerns, including Huasteca Petroleum Co. in Mexico, and Indian Territory Illuminating Oil Co. He is survived by his widow, two sons and a daughter.

ROBERT MARTIN McFARLIN, 77, independent oil man, banker and philanthropist, of Tulsa, died Tuesday in a Kansas City, Mo., hospital. A native of Texas, Mr. McFarlin came to Oklahoma in 1892, and at one time was considered one of the wealthiest independent operators in the state. In late years he had disposed of many of his holdings. He contributed generously to religious and educational institutions. He is survived by two daughters.

FRANK M. FISHER, 49, general sales manager of the eastern division of Frick-Reid Supply Corp., and former resident of Oil City, Pa., died at a Pittsburgh, Pa., hospital last week. His widow survives.

Natural Gas News

Gas Association Schedules Annual Meeting in October

NEW YORK.—The annual meeting of the American Gas Association will be held Monday and Tuesday, October 5 and 6, at La Salle Hotel, Chicago. The first day will be given over to meetings of the sections and committees. The second day will be devoted to general sessions with final adjournment in the afternoon.

Programs for these meetings, in addition to business prescribed by law and by the association's constitution, will consist of discussions of war and postwar problems only. That the programs may be strictly up to date, it is probable that they will not be completed until shortly before the meeting. No entertainment will be provided by the association.

Belchic Elected President Of Southwest Natural Gas

SHREVEPORT, La.—George Belchic, executive vice president of the company since its organization in 1928, has been elected president of Southwest Natural Gas Co., Shreveport, La. The company engages in the transportation and distribution of natural gas, operating in Louisiana, Texas and Oklahoma. A successful operator for more than a quarter century, Mr. Belchic also is associated in an official capacity with a number of other oil and gas enterprises.

Mr. Belchic started in the oil and gas business on the Gulf Coast. He moved to Shreveport in 1916, where for many years he engaged in the drilling contracting business with Charles G. Laskey. With Mr. Laskey he steadily extended his operations to other fields. He is a graduate of several engineering schools, and before going into the oil business was a consulting mining engineer at Joplin, Mo., for several years.

First Commercial Outlet Provided for McKamie Gas

EL DORADO, Ark.—First commercial use of the "sour" gas produced in the McKamie field, Lafayette County, Arkansas, will be made in the near future by the new electric generating station now being built by the Arkansas Power & Light Co. at Stamps, near the field. The gas will be processed through the new desulfurization plant being built in the field by Carter Oil Co. and Atlantic Refining.

Increases in Sales of Gas Are Reported by Association

NEW YORK.—Utility sales of manufactured and natural gas during May totaled 168,537,500,000 cu. ft., according to the monthly report of the American Gas Association. Of this amount, natural-gas sales were 133,664,500,000 cu. ft., an increase of 11.4 per cent over those of the same month of 1941, and manufactured gas sales 34,873,000,000 cu. ft., an increase of 5.9 per cent.

Natural-gas sales for domestic purposes increased 15.9 per cent for the month, while industrial sales gained 5.6 per cent. Sales of manufactured gas for industrial use increased 15.9 per cent, while sales for domestic use decreased 1.2 per cent.

Revenues from total sales during May were $76,880,600 as compared with $70,966,400 for the corresponding month of 1941. This was an increase of 8.3 per cent. Natural-gas-sale revenues amounted to $43,737,900, an increase of 12.3 per cent, while manufactured-gas-sale revenues were $33,142,700, a gain of 3.5 per cent.

Pacific Coast Gas Meeting To Be Devoted to Business

SAN FRANCISCO, Calif.—The forty-ninth annual meeting of the Pacific Coast Gas Association scheduled to be held September 4 at the St. Francis Hotel, San Francisco, Calif., will be "streamlined" to the war economy. It will be devoted entirely to business, eliminating all forms of entertainment, frills and formal addresses and papers. Principal business will be the annual election of officers and discussion of reports of sections and committees.

The nominating committee has recommended the following for new officers for the ensuing year: President, F. M. Banks, vice president, Southern California Gas Co.; vice president, E. L. Payne, vice president and general manager, Payne Furnace & Supply Co.; treasurer, D. G. Martin, Pacific Gas & Electric Co.; directors for 2-year term, R. G. Barnett, Portland Gas & Coke Co.; E. H. Coe, Central Arizona Light & Power Co.; H. W. Edmund, Coast Counties Gas & Electric Co., and F. A. Woodworth, Spokane Gas & Fuel Co.; director for 1 year, A. H. Sutton, Mission Water Heater Co.

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Natural Gasoline

Arkansas Gasoline Plants Increase Daily Production

EL DORADO, Ark.—Daily average production of the nine gasoline plants in southern Arkansas during June was 2,235 bbl. of gasoline, 463 bbl. of butane and 11 bbl. of distillate, according to the monthly statistical bulletin of the Arkansas Oil and Gas Commission just released. The plants processed an average of 60,751,000 cu. ft. of gas daily, an increase of 5,136,000 cu. ft. over the 55,615,000 cu. ft. averaged daily during May. Of the 1,822,524,000 cu. ft. of gas processed during the entire month, 1,508,730,000 cu. ft. was received from oil wells, 259,725,000 cu. ft. from gas wells, and 54,069,000 cu. ft. from other sources.

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Justice Department Would Require Public Registration of Patent Pools

WASHINGTON, D. C.—The patent "cartel" between the Standard Oil Co. of New Jersey and the German I.G. Farbenindustrie (chemical trust) is being used by the Department of Justice as an example of patent pools which should be regulated by legislation it is now urging on Congress.

For several days last week Patrick A. Gibson of the Antitrust Division detailed to the Senate committee on patents the history of the Standard-I.G. patent dealings which were terminated by a consent decree last fall. Although these deals have been publicly reviewed on other occasions, Mr. Gibson went into great detail about them in an attempt to show that Standard tried to control the entire field of hydrogenation through patent licensing.

The objective of the testimony was to establish a case for legislation which would require public registration of all patent pools and licensing agreements. The department is scheduled to present examples of patent pools in other industries in support of its legislation.

During the hearings C. R. Starnes, an independent oil operator of Gladewater, Tex., told the committee that Standard is using its synthetic-rubber patents to build up a monopoly and that he had been denied a license to enter the business.

William S. Farish, president of Standard, sent two telegrams to the chairman of the committee, Sen. Homer T. Bone, denying Mr. Starnes' accusation and asking permission to correct misinterpretations alleged to have been made by Mr. Gibson.

New Dimout Order on West Coast Will Affect Oil Industry

The new dimout for the Pacific Coast, ordered by Gen. J. L. De Witt in the form of a general order and which will become effective August 20, will have far-reaching consequences on the California oil industry, although it is generally recognized as a step in the right direction. In order to conform with this new dimout order, it will be necessary to make material changes in the method of lighting service stations, marketing depots and drilling rigs. Fortunately there are not many drilling wells under way in California at the present time and this order will not be especially hard on drilling companies. The drilling rig can be brought into line by reducing the amount of illumination used and by shielding the lights so that no light goes up into the sky.

Safety engineers have been a little worried but now feel the situation can be met with little or no change in safety work, but will watch developments during the next several months. Illumination engineers have already tackled the problem of bringing service-station illumination down to the required 1-ft. candlepower which is approximately 20 per cent of the intensity of the average office.

Tank-Car Movement to East Decreases 15,750 Bbl.

WASHINGTON, D. C.—A total of 764,350 bbl. daily of petroleum and petroleum products were shipped to the Atlantic seaboard during the week ending August 1, according to Petroleum Coordinator for War Harold L. Ickes. This was a decrease of 15,750 bbl. daily or 2 per cent, since the previous week, when rail shipments reached the all-time high of 800,100 bbl. a day.

Trucking Contractors to Use PD-1A

CHICAGO.—Trucking contractors for the petroleum industry who are experiencing difficulty in obtaining maintenance and repair supplies under Order P-100 to keep their trucks, cranes, shovels, graders, hoists, tractors and other mobile equipment in operating condition should file PD-1A applications for their anticipated requirements, Wirt Franklin, director in charge, Office of Petroleum Coordinator, District 2, Chicago, recommends.

Kansas Field Trip Canceled

Because of the critical transportation situation, the Kansas Geological Society will hold no field trip this year.

ENGINEERING *and Operating* SECTION

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Strong Acid Gives Encouraging Results in West Texas Wells

By HARRY F. SIMONS

During the years when acid treatment has been used to increase production of oil and gas wells, practically everything has been varied except the strength of the acid. In the future, it may develop that the determination of the strength of the acid will be as important as the determination of the amount.

In this, the first of two articles, the results obtained in one area from the use of 20 per cent acid are described, and in the succeeding article, the results obtained from the use of 10 per cent acid will be discussed.

NORMALLY the strength of acid used in an attempt to increase the production of oil and gas-bearing zones in new or old wells is a 15 per cent solution of inhibited hydrochloric acid. There are several reasons why 15 per cent acid is selected for this work, but there are no reasons for using only this one strength. In one area, the use of 20 per cent acid has given outstanding results.

The amount of material in various formations which will react with the acid is never the same. For this reason alone it is evident that the strength of the acid used could be varied to considerable advantage. Various experiments on the amount of acid used and on the pressures employed have been attempted. The results were not always consistent, although general rules for the acidization of oil wells were developed.

The primary reasons for increasing the strength of the acid used are (1) a reduction in costs, (2) a greater increase in production of the well, and (3) less clean-out time after acidization.

Actually, there is a considerable number of phenomena concerned with the use of stronger acids not easily explained. One of the reasons for not using the heavier acid originally was the fear of plugging the formation, due to the sludge produced through the reaction of the acid with the limestone. The 15 per cent acid is also slightly less viscous and has a lesser tendency to emulsification. Testing of a sample of the formation with a stronger acid will determine, in many instances, whether an adverse effect would be produced.

The use of acid stronger than 25 per cent is impractical because of the difficulty of inhibiting the stronger acids. The 20 and 25 per cent acid was first tried about 5 years ago in Eddy County, New Mexico (Grayburg and Maljamar pools) and has been tried more recently in the Wasson and the Slaughter pools in West Texas. In the Grayburg lime in the New Mexico area, good response was obtained which encouraged operators to attempt the use of the stronger acid in the Big (Permian) lime. The accompanying table shows the results obtained through the use of a stronger acid in comparison with wells in the same field treated with regular 15 per cent acid.

It will be noted that the swabbing time after using 20 per cent acid averaged 13.9 hours, while swabbing time following the use of 15 per cent acid averaged 21.1 hours. The amount of fluid swabbed was less when 20 per cent acid was used. The number of hours flowed, after acidizing the well, was 16.8 in the case of 20 per cent acid and 36.1 in the case of the 15 per cent acid; volume flowed was 297.3 bbl. for the 20 per cent acid and 233 bbl. for the 15 per cent acid. The comparison is even more outstanding when it is seen that the barrels per hour is 17.6 with the stronger acid and 6.4 with the standard 15 per cent solution.

When using 15 per cent acid, it was noted that slugs of spent acid would be produced, after which clean oil would be brought to the surface for a while and then another slug produced. The swabbing or flowing of the well would have to be continued for some time before it was certain that all of the spent acid had been removed from the hole.

It has been noticed that when using the 20 or 25 per cent acid, all of the spent acid is recovered, after which the well begins making clean oil. For this reason alone, the time spent in cleaning out after acidizing is considerably reduced. The reason for this phenomena is not quite clear, although it may be due to the fact that the stronger acid has a blanket effect, holds together and is

TABLE 1—RESULTS OF USING STRONG AND WEAK ACIDS IN LIME WELLS

Well	Acid used—Gal.	Acid used—Per cent	Hours swabbed	Amount fluid swabbed	Hours flowed	Amount fluid flowed	Bbl./hr.	Potential
5A	2,000	20	21	254	14	217	15.5	668
3C	2,000	20	8	201	31	393	12.7	593
3A	2,000	20	18.5	253	6	105	17.5	287
4A	3,000	20	7	135	25	695	27.8	602
6A	2,000	20	17	239	9	166	18.4	384
4C	2,000	20	12	169	16	208	13.0	265
Averages			13.9	208.5	16.8	297.3	17.6	
2C	2,000	15	18	271	19	123	6.5	297
2A	2,000	15	31.5	402	51.5	240	4.7	414
2AA	2,000	15	19	233	38	336	8.8	458
4A	3,000	15	13	222				430
3A	2,000	15	19	220				120
Averages			20.1	269.2	36.1	233	6.4	

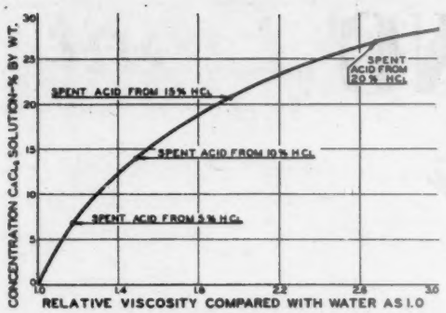

CONCENTRATION $CaCl_2$ SOLUTION—% BY WT.
SPENT ACID FROM 15% HCl
SPENT ACID FROM 10% HCl
SPENT ACID FROM 5% HCl
SPENT ACID FROM 20% HCl
RELATIVE VISCOSITY COMPARED WITH WATER AS 1.0

Fig. 1.—Viscosity of calcium chloride. Viscosity increases as concentration of calcium chloride in spent acid increases; therefore, treating acids of high concentration produce spent-acid solutions of high viscosity

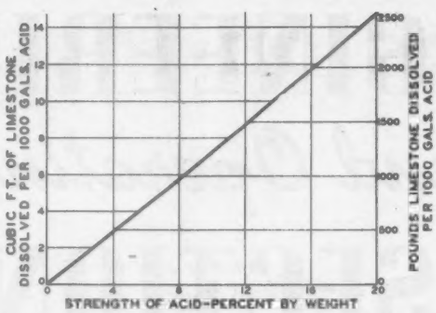

CUBIC FT. OF LIMESTONE DISSOLVED PER 1000 GALS. ACID
POUNDS LIMESTONE DISSOLVED PER 1000 GALS. ACID
STRENGTH OF ACID—PERCENT BY WEIGHT

Fig. 2.—Solution of limestone in acid. The quantity of limestone, in cubic feet and also in pounds, which will be dissolved by 1,000 gal. of hydrochloric acid of various strengths from 0 to 20 per cent, is shown here

shoved out as a slug. This might be expected because the sludge from the stronger acid has a higher viscosity and a high specific gravity (Fig. 1).

Another contributing factor may be the more rapid reaction rate of the stronger acid (Fig. 2). This might be assumed to produce a greater porosity in the immediate vicinity of the well bore which might be considered the critical area. It might also be expected that the stronger acid would have greater penetrating qualities as its strength would not be reduced to the point where it was not effective until after it had penetrated the formation a considerable distance. Regardless of what makes the 20 per cent acid more effective in some areas, the higher productivity of the wells and the reduced clean-out time make it worthy of consideration for wider use.

It might also be expected that the stronger acid would have a faster reaction rate and that the penetration of the acid into the formation would be more uniform. The stronger acid can, of course, remove much more material. One thousand gallons of 20 per cent acid is able to remove 14 cu. ft. of calcium carbonate, while the same amount of 15 per cent acid will remove only 10 cu. ft. A 3,500-gal. treatment of 20 per cent acid is equivalent to 5,000 gal. of 15 per cent acid. Consequently, there is less fluid to swab from the well.

In the Wasson and Slaughter fields in West Texas, the swabbing time necessary to obtain clean oil has been reduced from 14 to 15 hours to 4 or 5 hours through the use of the stronger acid. The reduction in swabbing time more than offsets the increased cost of the stronger acid and better potentials were obtained.

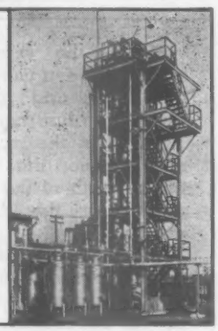
In this area it has been common practice to use stage treatments. When 20 per cent acid is used, it is applied in the first stage. On a number of wells 2,000 to 3,000 gal. of the 20 per cent acid has been used, followed by a second stage of 4,000 gal. of 15 per cent acid which, in turn, is followed by a third stage of 6,000 gal. of 15 per cent. The wells are swabbed and tested after each treatment to determine the necessity for further application of the acid. Actually, a number of different combinations of stages have been tried, but there was not a great deal of difference in results. However, it was found that it was better to always use the 20 per cent stage first.

To a great extent in this area production is from a rather pure limestone which has mostly horizontal porosity and permeability. There is little danger of acidizing into water, but generally a blanket is used on the bottom. Pressures using 20 per cent acid are comparable to those using the weaker 15 per cent solution. Generally in this area casing pressure starts at 1,500 lb. and drops to 600 or 700 lb. after the formation breaks down.

The main danger of using the 20 per cent acid is the fear of plugging the formation. However, so far results have indicated that this fear is not justified. The use of the stronger acid has, on the other hand, been a very definite money and time saver.

CHEMICALS *from* PETROLEUM

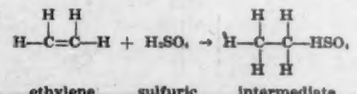
By W. T. ZIEGENHAIN



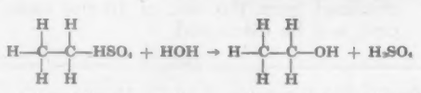
ETHYL ALCOHOL

THE war has greatly expanded the industrial need for ethyl alcohol and in recent weeks much has been written about making synthetic rubber from this material. Almost without exception, laymen associate the production of ethyl alcohol with the fermentation of grain or farm-produced sugars. However, the production of this alcohol from cracked petroleum gases has become highly commercialized. As early as 1932 the annual production of alcohol from ethylene, the latter being a petroleum olefin, totaled 7,000,000 wine gallons and the production is known to have registered substantial increases since. However, the production of this material is almost entirely accounted for in the output of one company and the present output is not to be made public.

The production of this alcohol from petroleum follows the reaction:



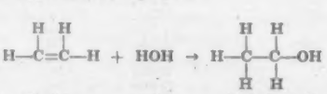
ethylene — sulfuric acid — intermediate



intermediate — water — ethyl alcohol — sulfuric acid

Separation of the alcohol from the water is accomplished by distillation of the solution followed by caustic treatment of the alcohol portion and redistillation.

Numerous efforts have been made to utilize the increasing production of olefins from high-temperature cracking in a process of hydrolizing these fractions directly as



ethylene — water — ethyl alcohol

However, the older method of sulfonation has been retained commercially.

Ethyl alcohol is probably best known as a constituent of whisky, gin, beer, etc., but millions of additional gallons of the commercially pure product are used annually as solvents in the preparation of pharmaceuticals, flavoring extracts, perfumes, resins, and as an antifreeze in cars.

Ethyl alcohol is colorless and boils at 78.4° C. It weighs 6.6 lb. per gal. (absolute at 20° C.).

Chemists and engineers who have worked close to the subject of utilizing ethyl alcohol as a basis for making butadiene are now told that relative costs between making alcohol from petroleum and from grains must be ignored. Under the present war economy stress is laid upon producing rubber substitutes and doing so by consuming relatively little steel and other critical materials in the fabrication of the processing equipment. They are generally in agreement that ethyl alcohol can be made much more cheaply from refinery gases than from grain. They also agree that no vital materials are needed now to convert grains to ethyl alcohol since the fermentation vats and stills are already in distilleries.

Just how much equipment and experimentation will be necessary to convert the alcohol into butadiene is a moot question, but a serious one and the one upon which the petroleum industry may look with skepticism for statements made by the grain advocates if there is any effort to "railroad" the operations under one industry.

The same chemists and engineers who are laboring with the butadiene-alcohol problem now point out that there really is little justification for pushing the use of alcohol for making synthetic rubber because all of the present stocks of alcohol, plus what can be manufactured, are needed to make other vital war materials. They point out the value of ethyl alcohol in the synthesis of toluene, acetaldehyde, ethyl acetate, ethylene and the many essential derivatives of ethylene. They argue that if ethyl alcohol is logically utilized for the manufacture of such materials, the refining companies be permitted to procede with their butadiene installations for the conversion of cracked gases into butadiene. They say this is the best way to get both groups of war necessities made and conserve metals.

Camouflage on the Oil Front

By MILTON L. GENDEL
Chief Assistant Designer,
Camouflage Engineering Co., Inc.

Potentially every industrial installation in the United States is a target for Axis bombs. This particularly applies to all facilities for the production, transportation and refining of petroleum as the war effort is dependent on a continuous supply of fuel.

In this article the general principles of camouflage are discussed as well as their application to buildings and equipment used in the oil industry.

CAMOUFLAGE is a weapon of war. It has an ancient history that finds its roots in the desire of the hunter and the hunted to baffle their opposition during predatory maneuvers. Men and animals have always looked to forms of concealment or confusion to protect themselves and to surprise the enemy. Indians on the warpath used to paint and feather themselves to merge with their surroundings and Daniel Boone counseled frontiersmen to dress the color of the leaves.

Until the introduction of the airplane instruments of war were concentrated along the battle fronts, but since the advent of the airplane and the concept of total war the fronts have been replaced by larger fields of activity, and will undoubtedly before this war is over increase in their size to include entire countries. (See Alexander de Seversky's "Air Power.")

Anything associated with man has become a military target and requires, therefore, military means for its protection. In accordance with the characteristics of total war all nations involved recognize the vital importance of maintaining their means of production at a high level of activity by guarding them against attack.

Today war can be won or lost by oil. Oil is needed by the Army, the Air Force and the Navy, and there can be no group in the United States more interested in the protection of its property and the assurance of its ability to supply the war effort than the producers, refiners and distributors of the oil industry. The Navy has announced convoys for tankers along the coast, but there are no convoys for oil from the christmas tree through the pipe line, refinery and terminal to the tanker. Yet the oil must be protected, and the principal way to do it is by the use of camouflage.

As it is impossible for every individual property, large or small, to be provided with airplane and antiaircraft units for its protection, camouflage assumes a crucial importance for the owner of a field or refinery. This is particularly true of owners of oil properties where the installations are spread over great areas. The oil man has nothing to do with airplanes and artillery; when such appear they are selected, provided and maintained by the Army and Navy. The oil operator does choose and install, subject to the approval of the Army district engineer, some scheme to keep his property from making a good target for the enemy.

In most other countries the property owner does not have this responsibility, but national attitudes toward camouflage vary from government to government.

Central Control of Camouflage

The British have, after long and acrimonious debate (see discussion in Nature, London, from June through November, 1940), rationalized their camouflage program under government auspices so that the large and most important plants are camouflaged by governmental departments, while the small plants shift for themselves.

The Nazis inherited along with the traditional German military machine a feeling for camouflage on the grand scale which found its earliest expression on the western front during the first World War in the complete coverage of square kilometer after square kilometer of villages and roads by false fields, paths and houses that concealed beneath them the traffic of war and the congregation of troops for secret offensives. The enormous camouflage installations at Hamburg and Berlin today show how much value the Nazis attach to camouflage as a military weapon. Camouflage in Germany is in the hands of the *Organisation Todt*, formerly headed by Todt, (the engineer who built the *Autobahnen* and the West Wall, and who died recently), and now headed by Speer. The *Organisation Todt* is a large public corporation devoted to grandiose engineering projects; it is very close to the regime.

In Russia the serious study of camouflage theory and practice received its greatest official impetus in the early 1920's through the founding of a school for camouflage at Moscow, the good results of which have been evident in German communiques complaining about the difficulties with camouflaged Russian airfields.

The Japanese are able and ambitious camoufleurs, and the Dutch are supposed to have held out as long as they did in the East Indies only because of their excellently camouflaged airfields.

Targets have been missed by British, Germans, and Japanese because of skillful and properly executed camouflage. A recent newspaper report tells of the partial failure of an American bombing mission in Rumania in trying to locate well-camouflaged oil installations near Ploesti.

Poorly camouflaged objectives, however, can increase the danger of attack as the Germans discovered in their colossal attempt to camouflage the Binnen Alster.

It should be added that camouflage is not effective for mass raids such as those that took place on Cologne, Duisberg, Lubeck, but the probability of attacks on an overwhelming scale on American targets, even should the enemy temporarily occupy nearby bases, is very small.

In the United States it is only slowly that some idea of the importance or even the specific nature of camouflage is being grasped by those most concerned—the owners of industrial properties.

This failure may be ascribed to a plethora of irresponsible accounts in the popular publications giving the impression that camouflage is a sort of hocus-pocus without rational basis, and the extreme scarcity of intelligent and serious discussions such as the one that appeared in the March 1942 issue of Fortune. But given an awareness of the value and importance of camouflage, what can the property owner do to provide his plant with camouflage protection? Just as he would go to an architect to design his buildings, he must go to a camouflage expert to plan his camouflage.

View of tank farm which is entirely uncamouflaged, offering good target for the bombardier

Certain inexpert camoufleurs have recommended painting tops of oil storage tanks black and dark brown, colors which any oil man knows absorb the long (heat) rays of the sun and cause evaporation. In one instance a so-called camouflage expert recommended that cinders be placed on top of oil tanks and in the fire breaks; he did not understand the harmful effects of cinders around oil installations. A competent camoufleur would have known that camouflage paints have been developed which under infra red photography reproduce just like natural foliage; these paints reflect the long (heat) rays and are as good for oil tanks in many instances as white or aluminum color.

The camouflage expert can never be an indi-

"MAN-HOURS"
—the misleading measure of production

It requires but one eye to see that man-hours alone are no measure of production. The thing that counts is how much that man can produce in one hour.

ALTER EGO: Sure. By one method he may produce two or three times as much per hour as by another method.

Take arc welding. This method results in far greater effectiveness. In joining steel, one welder does the work of two, three or four men using other methods. And he does a better job with 15% to 25% less steel.

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THE LINCOLN ELECTRIC COMPANY
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Target is dulled out, the simplest and cheapest type of camouflage

Example of partial concealment camouflage, with false roads and houses

vidual working alone. He should be one of a staff whose fields of knowledge embrace architecture, engineering, psychology, topography, botany, physics, mathematics, design; and all this knowledge must express itself practically in terms of the immediate problem so that each field acts as a check and coordinate for the others. For example, if during the first planning conference, it is suggested that certain structures or trees would be useful, the engineer or botanist might find it impossible to erect those structures or plant those trees on or near buildings to be protected. Other suggestions would then be made.

The first thing the camouflage staff does is to visit the plant and note carefully its plan and elevation and its relation to the landscape and local topography, its pattern of typical activity, that is, the circulation of traffic in relation to it, and the hours of influx and outflux of the personnel, its arrangements for parking cars and trucks, and its working activities such as emission of smoke, light and flame. Also to be noted at this time are details such as the type of construction of the walls, roofs and windows so that the paint and structure later to be recommended will be suited to the kinds of existing surface.

Use Aerial Survey

The staff then makes an aerial survey of the terrain, carefully observing characteristics and peculiar features for a radius of at least 10 miles around the plant; particular attention is paid to landmarks that might serve to give an enemy airplane bearings upon its target. Topographical patterns and colors are recorded personally by the camoufleurs and also by the camera using both panchromatic and color film and both in plain and stereoscopic series from four points of the compass, looking up sun and down, and from oblique and vertical angles at various altitudes up to 10,000 ft.

Color is important in camouflage, but tone is of greater importance. Even these, however, are secondary to a complete understanding of the shadow problem, as all colors begin to gray at 15,000 ft., and at 25,000 ft. no color can be seen from the air except as a gray. This is particularly significant when it is recalled that most aerial reconnaissance takes place between 30,000 and 40,000 ft. While shadows do not have a great effect on the eye at 5,000 ft., the higher one goes the more they seem to sharpen. Many small objects such as hillocks and buildings can be easily defined at 30,000 ft. when the eye no longer recognizes color.

Make Scale Model

The staff next prepares a scale model of the target and its surroundings by pooling all the notes and information they have collected individually according to each one's specialized knowledge. The importance of models is known to the expert camoufleur and no camouflage expert will work without a heliodon as the shadow patterns will influence most strongly the kind of design that is developed.

It will then be decided whether it is possible to conceal the plant entirely or partially, or whether it would be best to resort to confusion. Total concealment is most often out of the question but partial concealment is in many instances just as efficacious, while confusion is often the only solution. It is of these two types of camouflage that the man walking along the street says: It isn't camouflage, I can see it. In both conditions recognizable features of the landscape are made to disappear by painting appropriate design and tone to the landscape and by the use of structures which change the contours of the target and break up or transform its shadows. Partial concealment might not operate below 6,000 ft. or it might register as a camouflaged object on photographs, but it would still serve to make the bombardier uncertain and spoil his aim. The bomber's angle of recognition of his target is about 30°, that of the dive bomber is about 55°. It is, therefore, more important for the camouflage to be fully operative at oblique angles than at the vertical.

If it is impossible or silly to attempt to make a plant disappear into its surroundings, and this would be so where a plant is located in the midst of several square miles of industrial installations (such as pumping equipment one sees in Illinois, Oklahoma and Kansas), or on a small island of which it is the main feature, confusion must be employed so that the enemy, although knowing where his target is, cannot isolate it with certainty and destroy it.

Confusion may be created by obliterating landmarks which lead to the objective with paint, structure or smoke screens, and by making the objective a peripheral element of a large, abstract design, or sometimes even concealing it separate from the design. The design is created to attract attention to itself, and if the target is not part of it, is a small part of its margin, there is a good chance that it will avoid direct attack. Many such systems are known, but the best known is the use of poorly camouflaged dummy plants at a safe distance from the real objective.

Exhaustive tests follow completion of the design in model form, and when nothing is left to be desired, plans and color charts are prepared for execution of the actual painting and construction.

Petroleum Camouflage Problems Different

There are camouflage problems arising in the oil industry which are extremely difficult—East Texas for instance. It may be impossible to camouflage thousands of wells, but it is entirely possible to camouflage and so protect the important refineries. Refineries and docks are not hard problems. Pumping stations are simple things to camouflage, and as all oil men know, pumping stations are the heart of a pipe line, and for an enemy to destroy a few of them on an east-west pipe line would impair the whole line. A complicated area such as East Texas is impossible to camouflage by paint and structure alone, but there are other means of concealment for oil installations which would give a high degree of assurance against important damage being done.

Camouflage is highly complex work that requires the combined skills of a group of men, expert in their fields. Col. Homer Saint-Gaudens, camouflage officer on the staff of the chief of engineers, who is dean of camouflage in the United States, summed it all up in the title of a recent article on camouflage; the title was "Not by Paint Alone." If owners of future targets had the responsibility of providing airplanes and anti-aircraft batteries for the protection of their property, they would seek the advice of experts in these weapons. Camouflage is the only means of protection left to the decision of the owner. He must be sure that he gets the best for his money, for camouflet, a word cognate with camouflage, is defined as "a stinking composition blown into the face of the enemy." If camouflage is left to the inexpert the probabilities are that many "stinking compositions" will be conceived.

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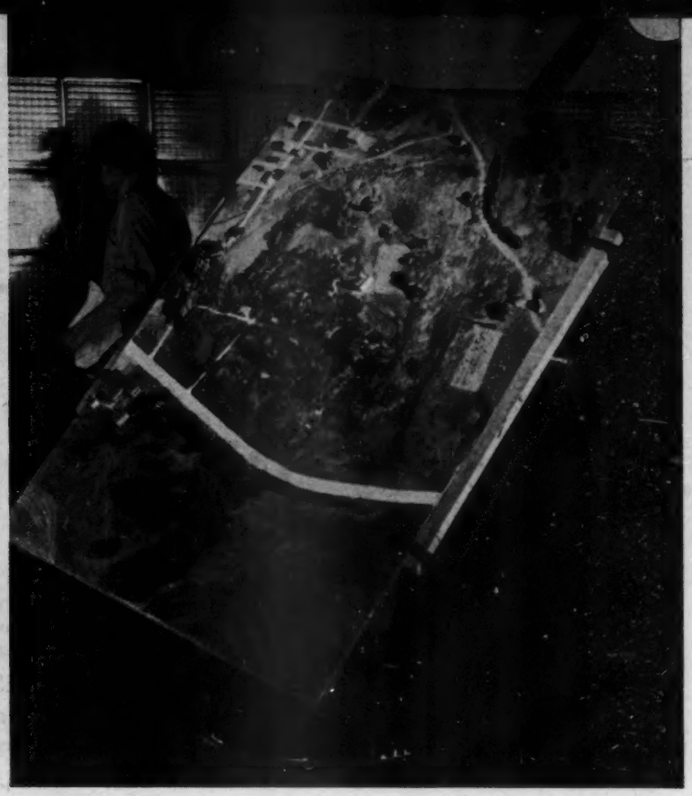

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Automatic Discharge from Salt-Water Pits in the East Texas Field

MOST oil producers consider it an almost unbearable circumstance that they are forced to spend money on treatment of salt water before the water can be disposed of. For this reason there has been an attempt, noticeable at all salt-water treatment plants, to reduce attendance costs to the absolute minimum. Automatic equipment is one resort used for lowering the day-to-day cost of plant operation.

In the accompanying picture, Fig. 1, a pickup pump at a salt-water pit is seen with an automatic starter and shutoff. A float is hung on a chain inside of a vertical concrete pipe. The chain passes over a small wheel, and a lead weight is attached to its other end, hanging outside of the pipe. The small wheel is on the switch box of the pump motor, and immediately beneath it is a lever which is forked at both ends. Stops are placed on the chain at the desired points and these engage the lever, thereby providing a means of tripping the switch to start and stop the motor. The vertical concrete pipe is open at the bottom so that its water level will be the same as that of the pit. When the water reaches a certain level, the motor is turned on, and it runs until the water has been drawn down to a predetermined level. Discharge from the pickup pump goes to a water-disposal well located outside of the limits of the field.

Regulator Made on Lease

In Fig. 2 another type of device is seen which accomplishes the same purpose for a different type of pit. This automatic device, incidentally, is a lease-made product, and was designed and made to operate by the Tide Water engineering department in the East Texas field. It is in use at Tide Water's disposal plant on the W. R. Nicholson lease in the extreme north end of the field.

The chemical-treating plant at the Nicholson lease disposal system is well below the level of the salt-water pit. For this reason no pickup pump is required. The water flows by gravity from the pit into the chemical-treating plant, and is then pumped to the disposal well. The problem in automatic control was to design a system which would accomplish three tasks simultaneously. It had to open and close the 6-in. valve on the discharge line from the pit; it also had to control the starting and stopping of both the chemical-mixing pump and the chemical-plant discharge pump. These three tasks had to be synchronized so that the entire plant would be put into operation when the pit-discharge valve opened. The design was necessarily complicated by the requirement that the pit-discharge valve had to be either all the way open or completely closed, a requirement made necessary by the fact that the chemical-mixing plant could only be adjusted to treat a uniform rate of water flow.

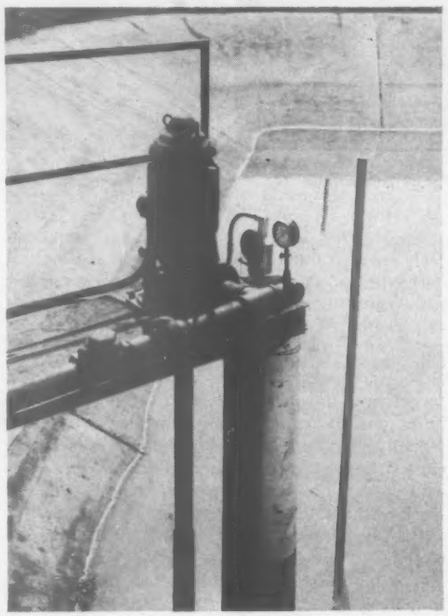


Fig. 1—Electric pick-up pump with automatic starting and stopping device at a Gulf Oil Co. salt-water pit

Mechanical Operation Desired

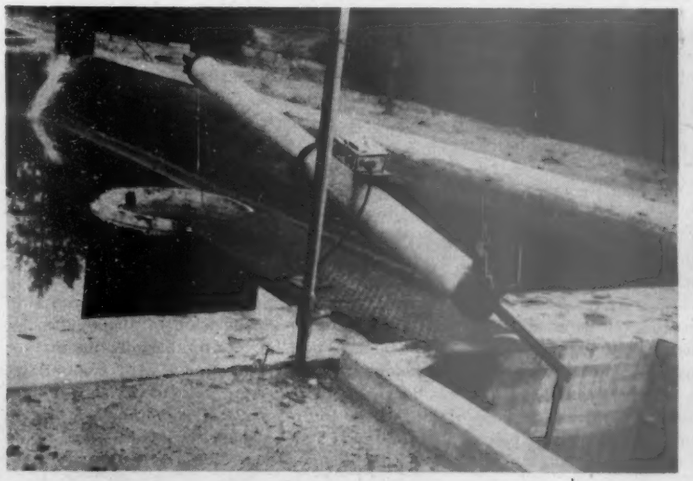
There are two or more devices now on the market designed for closing a valve automatically by electrical means. However, due to the scarcity of electrical equipment, and also because of the reluctance of operators to make large cash outlays for water-disposal equipment, it was considered necessary that the automatic device for closing the pit-discharge valve should be mechanical. The long object, looking like the barrel of a field gun, is a tank 6 ft. long and 6 in. in diameter. It is half full of water and is supported by a pivot at its center. At its front end it is connected to a float which hangs inside of a vertical concrete pipe. (In the photograph this float has been disconnected during repair work at the chemical plant.) The back end of the long slender tank is connected to the lever arm of a lever-operated valve, which is on the pit discharge line several feet below ground level.

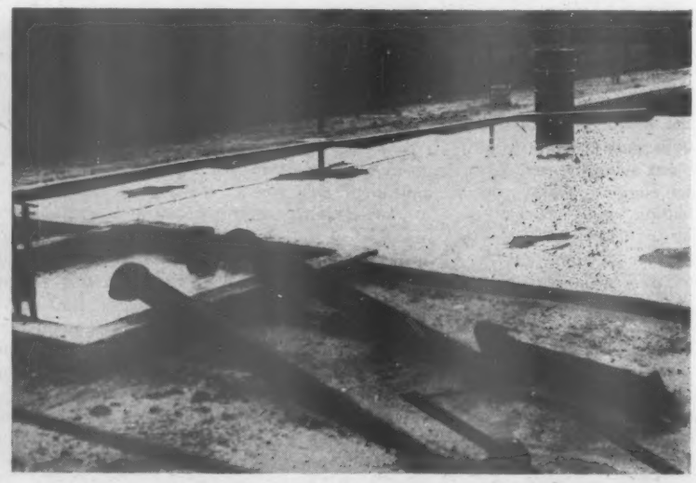
When the pit is empty, the front of the pivoted tank is down, and in this position it is holding the valve closed. As the water level in the pit rises, the front of the slender tank is raised upward by the float. The valve, however, remains closed until after the tank has passed its horizontal position. At this point the surge of water flowing to the other end of the tank makes available enough force to move the lever arm of the discharge valve, thereby opening the valve. An over-center spring on the lever arm then snaps the valve wide open. After the water level drops about 1 ft., the lever action is reversed.

On top of the "actuating tank" is a simple switch for starting and stopping the electric motors of the chemical plant. Mercury is in a small glass tube which tilts with the tank. By flowing to one end of the tube the mercury makes the circuit, while tilting of the tank in the other direction breaks the circuit.

While the Tide Water automatic device is somewhat complicated in design, it is not costly because of the materials used. For example, a common screen-door spring was used to provide the over-center spring for the valve lever arm. The tank is shop made from light metal.

Fig. 2 (left)—Automatic shutoff for large valve at salt-water pit. Fig. 3 (right)—Aeration method used at Tide Water's Nicholson lease plant. The salt water flows slowly over concrete slabs prior to chemical treatment





Refinery IDEAS

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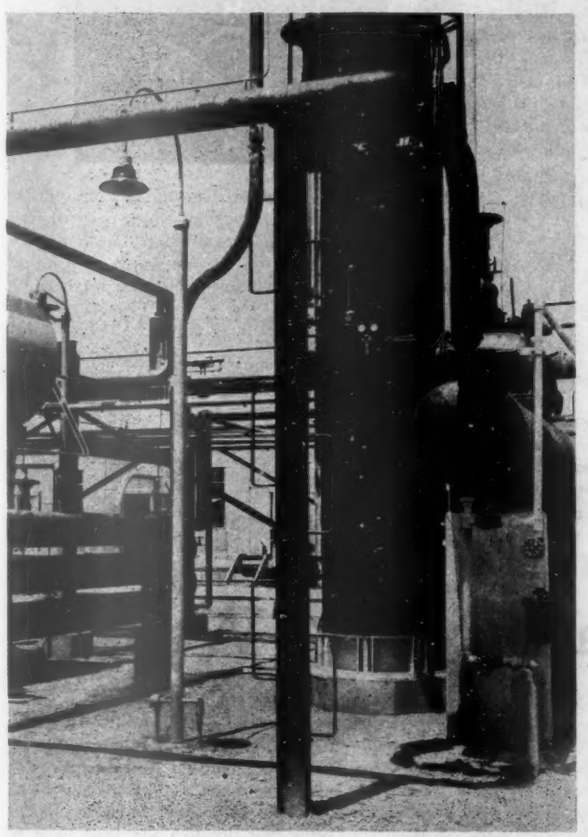
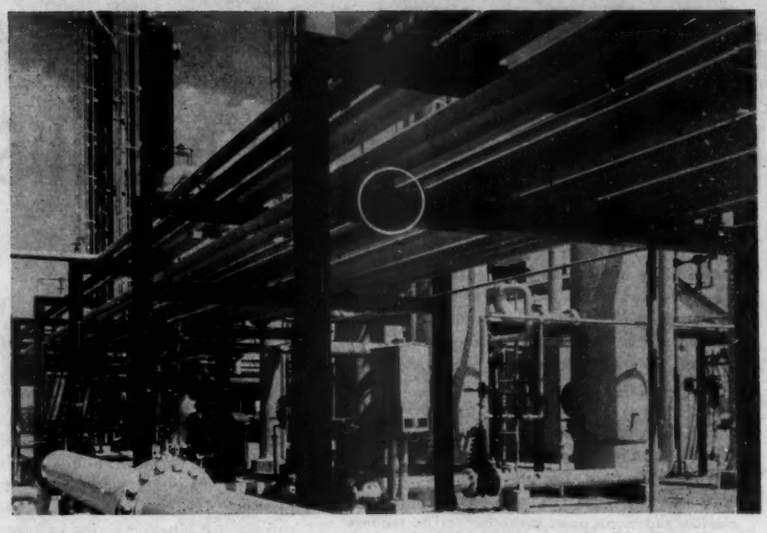


D-Rods Welded to I-Beam Form Ladder

In many refineries the operator is obligated to occasionally mount a platform or ladder in order to adjust a valve or take a reading from an instrument. This is especially true under present methods of construction in which valves and instruments are placed near the facilities served and at a place causing the use of the least possible materials consistent with good operation. Here the plant operator has bent ½-in. bar iron in the form of an open D and these have been welded in a staggered position along the length of the column to form convenient and safe steps. Scrap material was of course used.

Overhead Piping on I-Beam Sections

In order to increase the area over which heat insulation may be applied to overhead pipes, a recent construction project specified that the lines rest upon short sections of split I-beam. These sections were cut to suit the overhead lines and each cross-section of the I-beam was cut

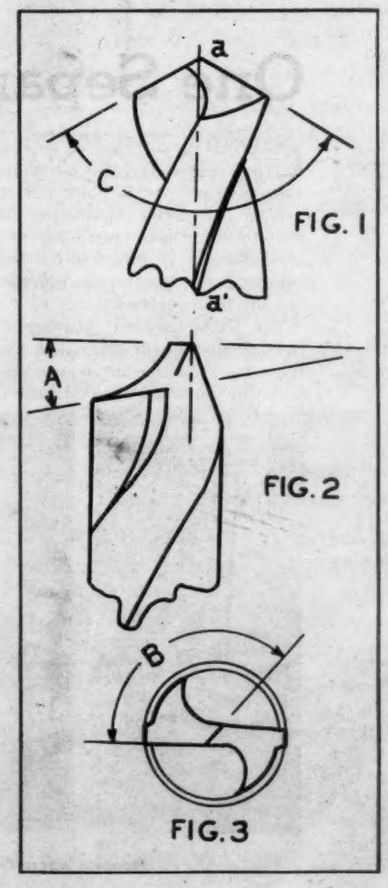


down the center of the web to make two pipe supports. Each support was welded to the pipe and the flat part of the I-beam section was then allowed to rest on the pipe frame. On the frame, the I-beam sections could move as the pipe temperature changed and without causing a strain in the assembly, and a minimum of uninsulated metal was exposed to air.

Correct Use and Care of Twist Drills

The ordinary drill has been designed and finished to most exacting specifications but it is often required to meet abnormal treatment. This is especially serious now because drills are needed in war work. One refiner has prepared instructions to its operators which are reproduced here in part.

The two cutting edges of a drill must be so ground that they are equal in length, and make the same angle with the axis of the drill (Fig. 1). For alloy steels, angle "C" should be 135°. For soft materials and general use, angle "C" should be 118°.



The angle of clearance at the center is important. This angle "A" (Fig. 2) varies from 6° to 9° in steel, and in soft materials from 12° to 15°. The clearance angle is proportional to that at the periphery. In other words, as the angle of "A," Fig. 2, increases from 6° to 12°, the angle of "B," Fig. 3, increases from 118° to 135°. Insufficient clearance at the center causes drills to split up the web while too much clearance causes them to chip. Grind the cutting lips so that they are same length and at the same angle.

Speeds and feeds should be watched. If either is too great, the drill will burn. Use the proper coolant. Don't try to grind the drill by hand. The tool house has a machine to grind them properly.

If the drill becomes dull, don't try to force it through the material.

Be on the alert for hard spots in the material you are drilling. They will quickly break a drill.

If it is a drill with a Morse taper shank, don't try to take it out of the chuck by pounding. Get a drift key. If it is a straight shank drill, make sure drill doesn't turn in chuck.

GLOSSARY of terms used in PETROLEUM CHEMISTRY

Often the reader feels at a disadvantage when he sees words intended to fit into a discussion of modern refining operations. He says the material is "too technical" and avoids further perusal. This usually represents a loss to the reader and to the author.

The Oil and Gas Journal has therefore undertaken to explain in simplest form a long series of such terms now commonly found in petroleum-chemistry literature. The presentation of this material in serial form is intended to promote discussion and is an open invitation for its readers to submit questions or technical terms which they might like to have explained later in the series.

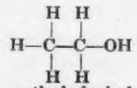
The discussions are arranged alphabetically throughout the series for the convenience of the reader but no hesitancy should be practiced in submitting a term for discussion which falls early in the alphabet as all requests will be handled.

Adsorption

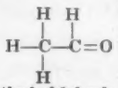
The more commonly used word with which adsorption is confused is *absorption*. If the reader will accept both to mean about the same thing but remember that *adsorption* relates only to removing something by causing it to adhere to the surface of a solid, the term should be less confusing. In refining, for instance, the dark impurities in unfiltered lubricating oils may be removed by contacting the oil with particles of natural or manufactured clays which have the power to attract and hold these foreign bodies because of their unusually strong adsorption value.

Aldehyde

The aldehydes represent a family and each differs from the corresponding alcohol only by the replacement of the hydroxl group by oxygen and the removal of one hydrogen atom as

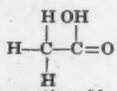


ethyl alcohol



ethyl aldehyde

If the aldehyde is further oxidized it is converted into the corresponding acid as



acetic acid

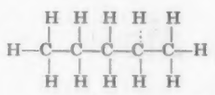
Most of us come into contact with acetic acid as the basis of vinegar, white vinegar being essentially a dilute solution of acetic acid.

Alkylation

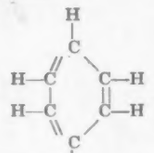
This term has been used by organic chemists to mean the joining together of an unsaturated hydrocarbon and an isomeric hydrocarbon. In actual refining, the objective is to utilize these chemically reactive hydrocarbons to make a compound of superior properties. For example, butylene and isobutane are joined to make isooctane. The first two materials are worthless as automotive fuels by themselves but if they are chemically combined to make isooctane they form a fuel which serves as a basis for fighting-grade aviation gasoline.

Aliphatic

Hydrocarbons in petroleum are shown chemically to be made up of hydrogen, carbon, and small quantities of other elements. The carbon atoms are linked, one to another, by what the chemist calls "bonds." Each carbon atom has four bonds. If those carbon atoms are attached to each other in a straight chain with open ends the molecule of material formed is said to be "aliphatic." If those carbon atoms arrange themselves in a ring or series of rings, the material is said to be cyclic, naphthenic, etc., depending upon the number of rings joined together.



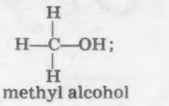
aliphatic



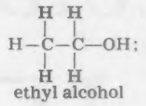
cyclic

Alcohol

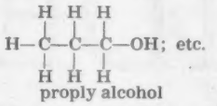
Alcohol is a family name given to a series of hydrocarbons which have the general chemical composition $C_n H_{2n+1} OH$. This, in itself, probably helps but little to understand the purpose of establishing this term but examples of their structural appearance from an atomic standpoint will help to clarify the grouping.



methyl alcohol



ethyl alcohol

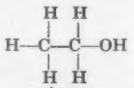


proply alcohol

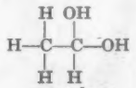
These examples represent the simplest forms of alcohols. It should be noted that each is characterized by the presence of an OH group (hydroxl).

Alcohols may have more than one OH or hydroxl group in which case they are known as di, tri, etc., depending upon the number.

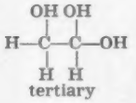
The position of the groups will determine whether it is primary, secondary, or tertiary as



primary



secondary



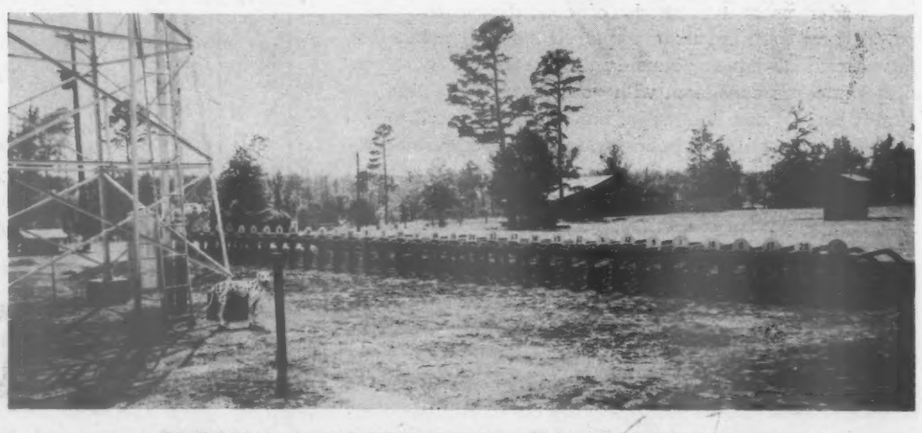
tertiary

One Separator for 34 Wells

CALLED on to conserve steel and other strategic materials, the oil industry sometimes finds it necessary to point out the fact that the greater part of its engineering efforts during the past 10 years have been directed toward material conservation. So effective has been this program that in many instances a practical minimum has already been reached.

The accompanying photograph illustrates a field production practice that leaves little or no room for reduction of required materials. Thirty-four flowing wells are tied into one separator by means of a well-planned manifold. With a minimum of valves and piping, the manifold is able to provide enough flexibility so that all wells making water can be separated from others.

Ten years ago each of the 34 wells would have been connected to an individual separator at its location, but now the practice pictured here is standard where new development work is carried on. Not only separators are saved, but the building of many supports for elevating the traps is avoided. With the separator and manifold at the tank battery, lease operation is simplified.



Manifold where the flow of 34 wells is controlled using only one separator

HYCAR
Synthetic Rubbers

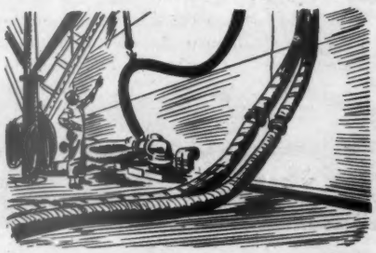
Molecular Structures Made to Order

Don't let that technical phrase "molecular structures" fool you. In Hycar synthetic rubber it means simply changing chemical formulas so that certain desired physical properties are put into different types of Hycar.

For example, Hycar in a tire or tank track is a special type of synthetic rubber to withstand abrasion, flexing, sunlight, and heat. The Hycar in a hose or tube must be impervious to the oil or the acid that passes through it. Hycar linings for aircraft fuel tanks must be resistant to gasoline. Extreme heat and cold, high pressures, terrific strain, electrical conductivity—these are some of the problems that must be licked in the ton of rubber products that go into the building of a military plane, with one common factor always paramount—light weight.

To control the physical properties of Hycar in different industrial services, Hycar chemists have conducted thousands of experiments. Thousands of tons of Hycar synthetic rubber are being produced. Countless articles are being made of Hycar—each using a type of Hycar synthetic rubber which has been literally tailor-made for the specific purpose.

Hycar is a raw material furnished to manufacturers of finished rubber products. Ask your supplier for information. If you are making a war essential, Hycar chemists and technicians will be glad to cooperate to speed production and to determine the type of Hycar for your needs.



Made from Oil, It's Oil Resistant

Hycar is made from oil, yet it resists oil's effects. Swelling in oil or gasoline is so slight that Hycar makes ideal hose lining, piston rubbers, sealing gaskets and many other flexible products for which natural rubber has never been satisfactory.

Let Hycar engineers tell you how this versatile all-American synthetic may help you solve difficulties and improve production and distribution profits.

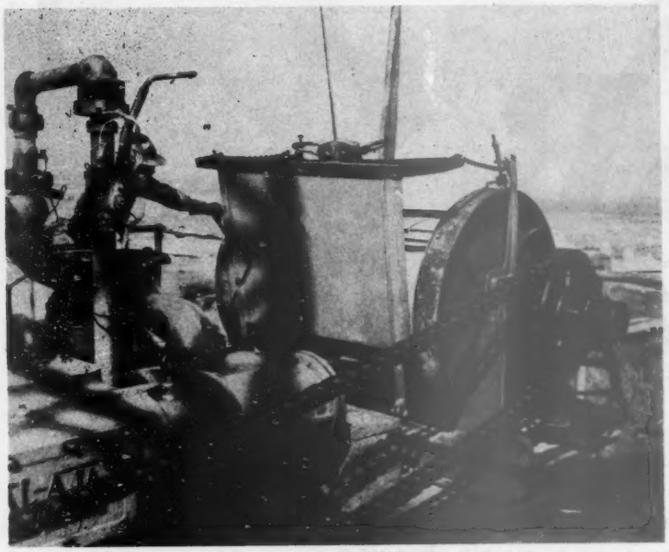
HYCAR CHEMICAL COMPANY, *Akron, Ohio*

RESEARCH • ENGINEERING • PRODUCTION

HYCAR *Synthetic* **Rubber**

LARGEST INDEPENDENT PRODUCER IN AMERICA OF BUTADIENE SYNTHETIC RUBBER

Operating Ideas



Hinged Guide for Sand-Line Reel

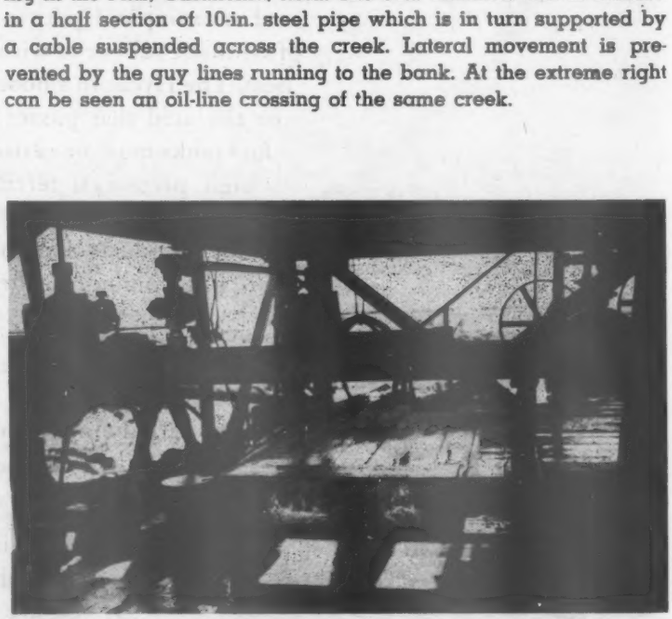
Smooth spooling of any type wire rope is essential if the maximum service is to be obtained from it. The accompanying picture shows the arrangement used by one drilling contractor for spooling the line used to run wire-line core barrels. The spooling device is attached to the sand-line guard which is hinged at the base and can swing outward as the line is pulled on to the drum or inward as it is reeled off. Short lengths of light chain attached to the brake support prevent the guard from falling outward too far in case the line goes slack.

Don't Grease Rod-Line Support

There are exceptions to the general rule that the more lubrication applied, the better a piece of machinery works. The rod-line support shown here is designed to reduce friction but it should never be greased. The pulley travels with the rod line, turning on the axle resting in the supporting cradle. If the axle and cradle are greased, there is a tendency for the pulley to turn and eventually it wears a depression in the cradle track and will not function properly.

Creek Crossing for Salt-Water Line

Asbestos, fiber, or plastic pipe is often used in an oil field for gathering salt water for disposal. This is due to the trouble experienced with the corrosion of steel pipe. Special facilities for crossing creeks must be provided in cases where the asbestos, fiber, or plastic pipe is used. The picture shows one creek crossing in the Fitts, Oklahoma, field. The 8-in. asbestos line is cradled in a half section of 10-in. steel pipe which is in turn supported by a cable suspended across the creek. Lateral movement is prevented by the guy lines running to the bank. At the extreme right can be seen an oil-line crossing of the same creek.



Skid Supports Flow-Line Connections

The connections used on the drilling head and the flow line of a rotary rig have increased steadily in weight to meet the pressures encountered. Putting these connections in place has become a task requiring considerable time and effort. By mounting the flow-line connections on a skid of the proper height, the work and time required have been greatly reduced. The skid is made from old drill pipe with the legs for the support of the connections being an inverted V. Turnbuckles on the legs allow for minor adjustments. The tool box on the base provides storage space for tools and other necessary small items.

Progress in METALS

By W. L. NELSON

OPC on Critical Materials

PAMPHLET No. 179612 of the Office of the Petroleum Coordinator contains suggestions and instructions to the refining branch of the industry regarding critical materials.

Steel Plate.—This is particularly difficult to secure and hence it is suggested that strip mill or universal rolled plate be specified for units operating at nothing other than normal pressures and temperatures. Strip mills are operated by the following companies: American Rolling Mill Co., Bethlehem Steel Co., Carnegie-Illinois Steel Corp., Inland Steel Co., Jones & Laughlin Steel Corp., Otis Steel Co., Republic Steel Corp., Wheeling Steel Corp., Youngstown Sheet & Tube Co., and Great Lakes Steel Corp., and the maximum gages and maximum widths supplied by these companies are listed in the pamphlet.

Galvanized steel sheet.—The use of this material as a weatherproof covering for insulation should be discontinued whenever possible, using substitute materials which are readily available.

Nonferrous metals.—Nearly all of these are under allocation and hence they should be used sparingly or not at all if that be possible, while keeping safety and continuity of operation in mind. During the emergency it might be wise to design for less heat exchange (uses much copper-base alloy) and burn more fuel.

Steel tubes.—Attempt to meet tubing needs from the following classification of materials:

1. Low carbon steel.
2. Low carbon 0.5 per cent molybdenum steel.
3. 2-3 per cent chromium, 0.5 per cent molybdenum steel.
4. 7-9 per cent chromium, 0.5 per cent molybdenum steel.
5. 18 per cent chromium nickel steel.

Use electric welded tubing and butt-welded pipe in so far as possible in place of seamless tubing because the tubing is needed in the manufacture of bombs.

Compressors.—These are scarce, particularly in sizes exceeding 300 hp., and hence the use of batteries of small compressors in place of a large one may in some instances be possible. In some instances the total compressor load in a plant may be decreased by absorption refrigeration units and when possible this is suggested. Under some conditions the use of refrigeration does not increase the over-all operating cost.

Power equipment.—Steam turbines are going into the ship-building program and hence are scarce. Large gas engines are scarce and hence the following substitutes are recommended:

1. Motors if electric power is being generated in the plant.
2. Reciprocating engines in place of turbines or gas engines if possible.
3. Use gasoline engines of the automotive type.
4. Utilize belt or direct drive because gears are almost unobtainable.

Turbogenerator power equipment.—Power-producing equipment is scarce and hence the industry must obtain power from a central station if possible. Thought should be given to turbogenerator installations to serve two or more refiners in one vicinity.

Valves and fittings.—These promise a most serious bottleneck. Substitute cast-iron valves for steel valves particularly in small sizes. Practice prefabrication and/or welding of pipe in so far as possible and avoid the use of alloy steel in valve bodies.

Water supply lines.—Use reinforced concrete pipe if possible.

Obsolete equipment.—This can be a source of much needed material particularly for rundown lines, tanks, valves and pumps, and the unsatisfactory materials will find a ready market as scrap.

Substitute plants.—Attempt to utilize existing plants for operations or capacities different from those originally planned rather than to reach for new equipment. Materials, engineering skill and draftsmen are not readily available.

Distribute orders.—Many items such as pumps and small items such as gaskets are not really scarce and hence if your manufacturer cannot supply these within a reasonable time, it is urged that the orders be spread to as many manufacturers as possible so that all will be busy.

Substitute Materials

POSSIBLE substitute materials are recommended in Business Series 22 of the U. S. Department of Commerce. Not many of the recommendations were of direct usefulness to the petroleum industry but those that seemed to be related in any way are listed here directly as stated in the government publication:

Aluminum paint.—Barite and carbon black paint vehicle—gray. "Gray Totrust" (titanium base pigments and a special penetrating oil).

Brass sheet.—Porcelain enamel steel; rubber on steel electro or dip; metal finished steel; plastics and synthetic resin finish on steel; glass. Metal finishes include: corronozing, chrome electro copper, electro cadmium, electro speculum, tin-electro copper, lead dip, cadmium dip, tin dip, flo metal.

Bronze.—An alloy of copper, silicon and iron, added to copper.

Bronze casting.—Steel forgings; steel castings; iron castings, laminated plastics; steel and Bakelite; powdered iron compacts; lead, iron or cadmium base die casting; steel stamping.

High-manganese steel in nondefense locations.—Chilled white iron.

Lead sheet.—Porcelain enameled steel, rubber on steel electro or dip, metal finished steel, plastics and synthetic resin finish on steel, glass. Metal finishes include corronizing, chrome electro copper, electro cadmium, electro speculum, tin-electro copper, lead dip, cadmium dip, tin dip, flo metal.

Carburized steel.—Reduce nickel content by introducing molybdenum (0.25 per cent).

Machinery and other nondefense goods.—Molybdenum and other alloys.

Nickel alloy-gray iron casting.—Copper, molybdenum, chrome in gray iron.

Steel drums, for packaging asphalt (400-lb. capacity.—Fibreboard—100-lb. capacity.

Cans for lubricating oil.—Rubberized paper bags and cartons are being tested.

High-speed tool steel.—Molybdenum high-speed steel. Metal-cutting alloy—carbon, chromium, molybdenum, vanadium, iron. "Van Lom."

Industrial cutting tools.—Molybdenum and tantalum.

Tungsten carbide.—Tantalum carbide.

Tungsten steel—high speed tungsten.—Reduce tungsten from 14 to 6 per cent by introduction of molybdenum.

Galvanized steel.—Terneplate, asbestos-corrugated sheeting, resin-bonded plywood, etc. Painted iron.

Galvanizing.—"Corronizing."

Wire and fencing.—Corronized coating.

Defense of war materials are of three classes: strategic, critical, and essential. According to the bulletin mentioned:

"A strategic material is defined as a material essential for the national defense, for the supply of which in war dependence must be placed in whole or in large part upon sources outside the continental limits of the United States, and for which strict conservation and distribution control measures are necessary.

"The following list includes material considered strategic by the Army and Navy Munitions Board:

"Antimony used in the manufacture of storage batteries, babbitt metals for bearings, and chemicals.

"Chromium, a principal element used in the manufacture of alloy steel, especially stainless steel; and for high-strength steels. Also used for refractories and in making chemicals.

"Coconut shell char, used as a gas absorbent in gas masks.

"Manganese, Ferrograde, used in the manufacture of iron and steel.

"Manila fiber, used in the manufacture of manila rope for the Navy.

"Mercury, used in manufacture of fulminate for detonating high explosives, for drugs, dental amalgam, antifouling paint for ship bottoms, storage batteries, barometers, mercury lamps.

"Mica, used in radio tubes, condenser sheets, airplane spark plugs, magneto condenser films; also required in electrical machinery and in the manufacture of munitions.

"Nickel, used in naval armament steel, in constructional steel for the automotive industry, in nickel-alloy steels for a wide variety of industrial purposes.

"Quartz crystal, used in oscillators in radio transmitters, for resonators at cable and long-distance telephone terminals, for quartz plates in sound-detecting devices and in detonator measures. Used widely in the optical industries.

"Quinine, a specific for malaria and other tropical fevers.

"Rubber, used to tire war vehicles such as field artillery, trucks, etc.

"Silk, used for parachutes, powder bags, etc.

"Tin, used principally in manufacture of tin plate, for the canning industry; also for solder, babbitt and bronze, used in gun bearings.

"Tungsten, used in tools for cutting metal, which require unusual hardness; in electric light and radio tube filaments. Tungsten salts are used in the chemical, pigment and tanning industries."

Metal-Working Terms

Planing and Shaping

Planing is a metal-cutting operation for the purpose of producing plane or flat surfaces. The work is fastened to a "platen" and is fed against the cutting tool. The principle of *shaping* is the same except that in the shaper the tool usually traverses the work, and the shaper is used for smaller work than the planer. It is less cumbersome to handle than the planer and may thus be easily adjusted to cut several different plane surfaces on a small object. *Slotting* is a similar operation except that the slotter is arranged so that it can cut slots in a vertical direction and at right angles to the work table.

Development, Operation and Valuation of Oil and Gas Properties—Part 12

Estimating Oil Reserves From Production-Decline Rates

By PARK J. JONES
Petroleum Engineer, The Texas Company

TABLE 1—ANNUAL DECLINE RATE = 0%

	6% interest			3% interest				6% interest			3% interest		
Year	Annual factor	Discounted accumulation	Present worth factor	Annual factor	Discounted accumulation	Present worth factor	Year	Annual factor	Discounted accumulation	Present worth factor	Annual factor	Discounted accumulation	Present worth factor
1	0.971	0.971	0.943	0.985	0.985	0.971	16	.405	10.404	.394	.632	12.747	.623
2	.916	1.888	.890	.957	1.942	.943	17	.382	10.787	.371	.614	13.361	.605
3	.864	2.752	.840	.929	2.871	.915	18	.361	11.147	.350	.596	13.957	.587
4	.816	3.568	.792	.902	3.773	.888	19	.340	11.488	.331	.579	14.536	.570
5	.769	4.337	.747	.875	4.648	.863	20	.321	11.809	.312	.562	15.098	.554
6	.726	5.063	.705	.850	5.498	.837	21	.303	12.112	.294	.545	15.643	.538
7	.685	5.747	.665	.825	6.323	.813	22	.286	12.397	.278	.529	16.172	.522
8	.646	6.393	.627	.801	7.124	.789	23	.270	12.667	.262	.514	16.686	.507
9	.609	7.003	.592	.778	7.902	.766	24	.254	12.921	.247	.499	17.185	.492
10	.575	7.578	.558	.755	8.657	.744	25	.240	13.161	.233	.485	17.670	.478
11	.542	8.120	.527	.733	9.390	.722	26	.226	13.387	.220	.470	18.140	.464
12	.512	8.631	.497	.712	10.102	.701	27	.213	13.600	.207	.457	18.597	.450
13	.483	9.114	.469	.691	10.793	.681	28	.201	13.802	.196	.443	19.040	.437
14	.455	9.570	.442	.671	11.464	.661	29	.190	13.992	.185	.431	19.471	.424
15	.430	9.999	.417	.651	12.115	.642	30	.179	14.171	.174	.418	19.889	.412

TABLE 2—ANNUAL DECLINE RATE = 2%

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
1	0.980	0.980	0.952	0.965
2	.961	1.942	1.833	1.885
3	.942	2.884	2.648	2.760
4	.924	3.808	3.401	3.593
5	.906	4.714	4.098	4.386
6	.888	5.602	4.742	5.141
7	.871	6.472	5.338	5.860
8	.854	7.326	5.890	6.544
9	.837	8.163	6.400	7.195
10	.820	8.983	6.871	7.814
11	.804	9.787	7.307	8.403
12	.789	10.576	7.711	8.965
13	.773	11.349	8.084	9.499
14	.758	12.107	8.429	10.008
15	.743	12.850	8.748	10.492
16	.728	13.578	9.043	10.952
17	.714	14.292	9.316	11.390
18	.700	14.992	9.569	11.807
19	.686	15.678	9.802	12.204
20	.673	16.351	10.018	12.582
21	.660	17.011	10.218	12.942
22	.647	17.657	10.403	13.284
23	.634	18.291	10.574	13.610
24	.622	18.913	10.732	13.920
25	.609	19.522	10.878	14.215
26	.598	20.120	11.013	14.496
27	.586	20.706	11.138	14.764
28	.574	21.280	11.254	15.018
29	.563	21.843	11.361	15.261
30	.552	22.395	11.459	15.492

TABLE 3—ANNUAL DECLINE RATE = 3%

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
1	0.971	0.971	0.943	0.956
2	.943	1.914	1.807	1.858
3	.915	2.829	2.598	2.708
4	.888	3.717	3.322	3.509
5	.963	4.580	3.986	4.264
6	.837	5.417	4.593	4.975
7	.813	6.230	5.150	5.646
8	.789	7.019	5.660	6.278
9	.766	7.785	6.127	6.874
10	.744	8.529	6.555	7.436
11	.722	9.251	6.947	7.965
12	.701	9.952	7.306	8.464
13	.681	10.633	7.635	8.935
14	.661	11.294	7.936	9.379
15	.642	11.936	8.212	9.797
16	.623	12.559	8.465	10.191
17	.605	13.164	8.696	10.562
18	.587	13.751	8.908	10.912
19	.570	14.321	9.102	11.242
20	.554	14.875	9.280	11.553
21	.538	15.413	9.443	11.846
22	.522	15.935	9.592	12.122
23	.507	16.442	9.729	12.383
24	.492	16.934	9.854	12.629
25	.478	17.412	9.969	12.861
26	.464	17.876	10.074	13.079
27	.450	18.326	10.170	13.285
28	.437	18.763	10.258	13.479
29	.424	19.187	10.339	13.662
30	.412	19.599	10.413	13.834

TABLE 4—ANNUAL DECLINE RATE = 4%

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
1	0.962	0.962	0.934	0.948
2	.925	1.886	1.781	1.833
3	.889	2.775	2.549	2.659
4	.855	3.630	3.246	3.430
5	.822	4.451	3.879	4.149
6	.790	5.242	4.452	4.821
7	.760	6.001	4.972	5.448
8	.731	6.732	5.444	6.034
9	.703	7.435	5.872	6.581
10	.676	8.110	6.261	7.091
11	.650	8.760	6.613	7.567
12	.625	9.384	6.932	8.012
13	.601	9.985	7.222	8.427
14	.577	10.562	7.485	8.814
15	.555	11.117	7.724	9.175
16	.534	11.651	7.940	9.512
17	.513	12.164	8.136	9.827
18	.494	12.658	8.314	10.121
19	.475	13.132	8.476	10.396
20	.456	13.589	8.622	10.652
21	.439	14.027	8.755	10.891
22	.422	14.449	8.875	11.114
23	.406	14.855	8.985	11.323
24	.390	15.245	9.084	11.518
25	.375	15.620	9.174	11.700
26	.361	15.980	9.255	11.870
27	.347	16.327	9.329	12.029
28	.333	16.661	9.396	12.177
29	.321	16.981	9.457	12.315
30	.308	17.289	9.513	12.444

TABLE 5—ANNUAL DECLINE RATE = 5%

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
1	0.952	0.952	0.925	0.938
2	.907	1.860	1.756	1.806
3	.864	2.723	2.503	2.609
4	.823	3.546	3.174	3.351
5	.784	4.330	3.777	4.037
6	.746	5.076	4.319	4.671
7	.711	5.787	4.805	5.258
8	.677	6.464	5.243	5.800
9	.645	7.109	5.636	6.302
10	.614	7.723	5.989	6.766
11	.585	8.308	6.306	7.195
12	.557	8.865	6.591	7.592
13	.531	9.395	6.847	7.959
14	.505	9.900	7.077	8.298
15	.481	10.382	7.284	8.611
16	.458	10.840	7.469	8.900
17	.436	11.276	7.636	9.168
18	.416	11.692	7.786	9.461
19	.396	12.088	7.921	9.645
20	.377	12.465	8.042	9.857
21	.359	12.824	8.150	10.053
22	.342	13.165	8.248	10.234
23	.326	13.491	8.336	10.402
24	.310	13.801	8.415	10.557
25	.295	14.096	8.485	10.700
26	.281	14.378	8.549	10.832
27	.268	14.645	8.606	10.954
28	.255	14.901	8.658	11.067
29	.243	15.144	8.704	11.172
30	.231	15.375	8.745	11.269
31	.220	15.595	8.782	11.358
32	.210	15.805	8.816	11.441
33	.200	16.005	8.846	11.518
34	.190	16.196	8.873	11.588
35	.181	16.377	8.897	11.653

TABLE 6—ANNUAL DECLINE RATE = 6%

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
1	0.943	0.943	0.916	0.929
2	.890	1.833	1.732	1.781
3	.840	2.673	2.458	2.561
4	.792	3.465	3.104	3.275
5	.747	4.212	3.679	3.929
6	.705	4.917	4.190	4.528
7	.665	5.583	4.646	5.077
8	.628	6.210	5.051	5.580
9	.592	6.802	5.412	6.041
10	.559	7.361	5.733	6.463
11	.527	7.887	6.019	6.849
12	.497	8.385	6.273	7.203
13	.469	8.854	6.499	7.527
14	.443	9.296	6.701	7.824
15	.418	9.714	6.880	8.096
16	.394	10.107	7.040	8.345
17	.372	10.479	7.182	8.573
18	.351	10.830	7.308	8.782
19	.331	11.160	7.421	8.974
20	.312	11.473	7.521	9.149
21	.294	11.767	7.610	9.309
22	.278	12.045	7.690	9.456
23	.262	12.307	7.760	9.591
24	.247	12.554	7.823	9.714
25	.233	12.787	7.879	9.827
26	.220	13.007	7.929	9.930
27	.208	13.215	7.973	10.025
28	.196	13.410	8.012	10.112
29	.185	13.595	8.047	10.192
30	.174	13.769	8.079	10.265

The accompanying tables were compiled by the author for use in evaluation work and an important part of the petroleum engineer's working tools. Illustrative applications of the tables will be given in the next and concluding installment in the series.

(Continued on Page 58)

CO$T Engineering

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL — PUMPING

AUGUST 13, 1942

MONEY SAVED THROUGH USE OF OIL-PRODUCTION METERS

ONE of the most interesting practices introduced into the production branch of the oil industry during recent years is the use of meters for the gaging of the output of the wells. This method has been used long enough so that it has passed the experimental and is now in the development stage. Many production engineers believe they can see oil-metering on a large scale in the near future; others feel that further improvements will be necessary.

Some rather outstanding installations have been reported, the most unusual being one which uses a central meter and automatic controls to gage the production from a group of wells. The production from one well is gaged until the separator at another well fills up, at which point the second well is cut into the meter and the first well shut off. As the separator at a third well fills up, the second well is cut off from the meter and the third well turned in, and so on.

The metering of oil would have been in common practice by this time except for the difficulties involved. Principal difficulty is the wide range in the character of the fluid being metered which affects the registration of the meter and prevents one meter from being suitable for all oil-measuring purposes. The change in gravity, gas content, salt-water cut, and the presence of sand, corrosive chemicals and foreign objects all affect the meter and its accuracy.

During the past several years improvement in the design and construction of the meters and the development of auxiliary equipment to take care of, or control, the adverse conditions have led to greater security when using this method of checking the output of oil wells. The degree of accuracy obtained has been increased until it is now common practice to measure the oil within plus or minus 1 or 2 per cent without difficulty. Extreme accuracy (within limits of ½ of 1 per cent) is possible with a meter which is thermostatically controlled and automatically corrects the volume to 60° F. However, such an improvement adds so much to the cost that it is economically impossible to justify such installations.

While the meters are an engineering advancement over the old method of obtaining production by gaging the tanks, the principal reason they have attracted so much attention from technicians is the money-saving feature.

Some engineers have worked to establish a satisfactory arrangement which will permit the oil produced from the well to be metered and delivered direct to the pipe line. At present, however, the practice is to produce the oil from each well, or lease, through a meter and into a tank battery which receives the production from other similar sources. This greatly reduces the amount of tankage and auxiliary equipment needed.

Cost of Equipment

The meters are particularly useful where it is necessary to keep the production from individual wells separate for any reason. This requires that at least two tanks be assigned to each well instead of using a central tank battery with facilities for periodic gages on the wells.

The cost of equipment for metering the oil from a well is shown in Table 1 while Table 2 shows the cost for obtaining production gages when two 250-bbl. tanks are used.

TABLE 1—INSTALLATION COSTS OF OIL METER*

Oil meter	$150.00
Air-gas eliminator	100.00
Regulator	80.00
Relief valve	15.00
Incidental fittings	100.00
Total	$445.00

*Average cost of metering setup.

TABLE 2—INSTALLATION COST OF TANKAGE

Two 250-bbl. tanks	$900.00
Tank site and erection	250.00
Pump and prime mover	85.00
Manifold fittings	150.00
Total	$1,385.00

There is practically no maintenance work required on tanks and approximately 20 years' service can be estimated as the useful life unless some adverse conditions exist. However, the tanks have to be gaged and a man is necessary for this work. His transportation cost must also be charged as part of the operation.

On the other hand the meters require maintenance work and an allowance must be made for the purchase of the needed replacement parts. There is also a charge for a man to obtain the readings from the meters. The following tables show the operating costs when using the two methods.

TABLE 3—OPERATING COSTS PER MONTH

Upkeep on meter	$1.75
Replacement parts	.85
Meter reader	1.10
Depreciation	.50
Total	$4.20

TABLE 4—OPERATING COSTS FOR TANKS

Depreciation	$3.00
Gager	10.00
Gager transportation	.50
Total	$13.50

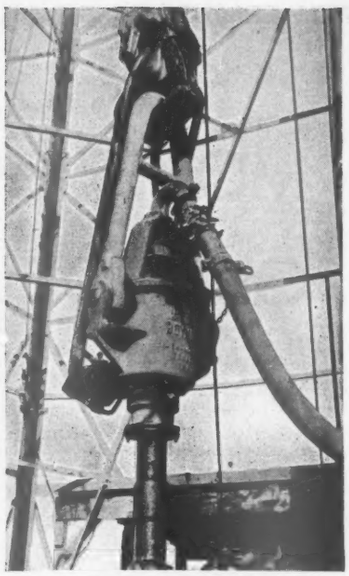
This indicates a saving of $940 in the capital investment required when using meters in place of the two-tank setup and a saving of $9.30 per month per well in the monthly operating costs.

There are two other factors which play a large part in the successful operation of oil meters regardless of whether they are positive displacement, inferential or weighing types. The personnel entrusted with their charge must be well trained and there must be tests conducted frequently enough to catch any errors in the metering before any big mistake in production is made.

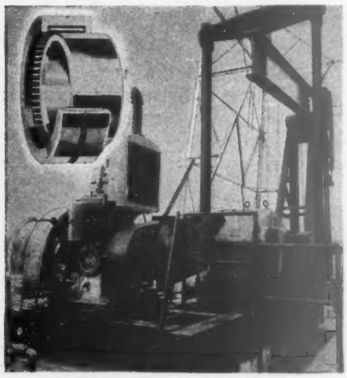
Where the meters are located centrally, a testing tank and equipment may be provided. A portable tank can also be used, care being taken to level at each test installation. A test meter which automatically corrects for temperature deviations also provides a check on the accuracy of the permanent meters.

IN THE NEWS
WITH BANTAM BEARINGS

GIANT ENGINES KEEP THEM FLYING, furnishing smooth, unfailing power for America's fast-expanding air fleets. Many of the nation's speediest, most efficient bombers, fighters, transports, and cargo planes are powered by huge, air-cooled, radial engines that develop 2,000 horsepower. Among the many engineering features that contribute to the successful performance of these engines is the use of Bantam Needle Rollers to provide anti-friction bearing units of unusually light weight and small size in proportion to their load capacity.

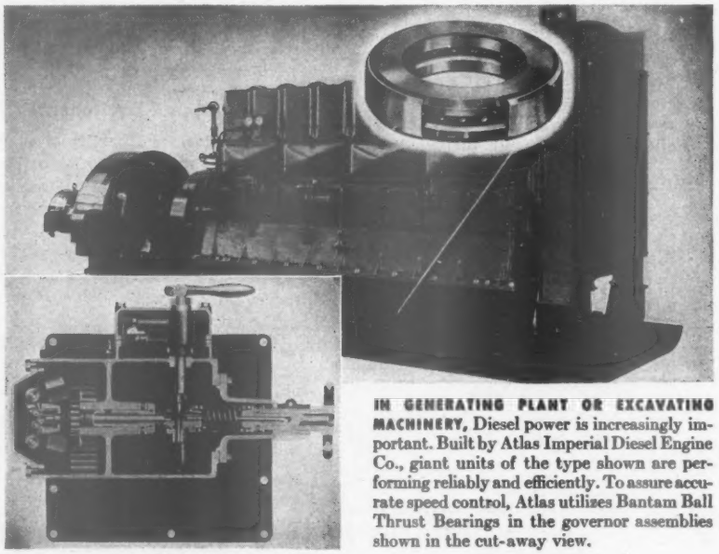


WELL DRILLING SPEEDS ARE FASTER, loads are heavier, depths are greater. 8-inch Oil-bath Rotary Swivels built by The International Derrick and Equipment Company embody in their design every feature and strength factor necessary in present-day drilling practice. Bantam Bearings provide a safe load capacity far above the most rigid requirements of the service, are a vital factor in the high performance standards of the equipment.



BACKBONE OF A COMBUSTION ENGINE is the crankshaft construction—and Weber Engine Company, after exhaustive studies, selected Bantam Quill Bearings for use on this vital part of their Vertical Gas Engines. Bantam Quill Bearings combine the advantages of anti-friction construction, high load capacity, small size, and ease of installation. For full details on this unusual bearing, write for Bulletin J-104.

BANTAM'S ENGINEERING COOPERATION is especially valuable in meeting new and unusual requirements. Bantam makes every major type of anti-friction bearing—straight roller, tapered roller, needle, and ball. Bantam engineers aid in the selection of the type that best suits your application—or design special bearings that meet your requirements. If you have a difficult bearing problem, TURN TO BANTAM.



IN GENERATING PLANT OR EXCAVATING MACHINERY, Diesel power is increasingly important. Built by Atlas Imperial Diesel Engine Co., giant units of the type shown are performing reliably and efficiently. To assure accurate speed control, Atlas utilizes Bantam Ball Thrust Bearings in the governor assemblies shown in the cut-away view.

BANTAM BEARINGS

STRAIGHT ROLLER · TAPERED ROLLER · NEEDLE · BALL

BANTAM BEARINGS CORPORATION • SOUTH BEND • INDIANA

Engineering Fundamentals

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL No. 32

AUGUST 13, 1942

PROPERTIES OF SUPERHEATED STEAM

IN order to meet the requirements of increased steam demand of the modern rotary-drilling rig, and in order to meet competition from other forms of power, manufacturers have found it necessary in the past several years to make improvements in steam-generating equipment. The use of superheated steam has been among these new developments. As a fundamental basis for the understanding of the developments along the line of superheaters, it is necessary first that one have a thorough knowledge of the elementary concepts dealing with the properties of superheated steam and related terminology. The purpose of this installment is to deal with such elementary principles in the form of discussion and illustrative calculations.

When the steam temperature is above the saturation temperature corresponding to the existing steam pressure, the steam is superheated. This condition is attained by the application of additional heat to dry saturated steam at any pressure. The superheating of steam takes place in a separate compartment where the steam is not in contact with its liquid.

The total heat content of a pound of superheated steam is made up of three parts, namely:

1. The heat of the liquid.
2. The latent heat of vaporization.
3. The heat of superheat.

This fact may be expressed in formula form as follows:

$$h = h_f + h_{fg} + C_p (t_{sh} - t) \quad (1)$$

where:

h = total heat of superheated steam, B.t.u. per lb.
h_f = heat of the liquid, B.t.u. per lb.
h_{fg} = latent heat of vaporization, B.t.u. per lb.
C_p = mean specific heat of the steam at the temperature and pressure of superheat, B.t.u. per lb. per °F.
t_{sh} = temperature of superheated steam, °F.
t = temperature of saturated steam at existing absolute pressure, °F.

The mean specific heat of superheated steam varies with the amount of superheat and with the existing absolute pressure. Table 1 gives values for the mean specific heat of superheated steam which were calculated from steam-table data for superheated steam.* By use of saturated steam-table data as given in Installment 31 and data from Table 1 of this installment, substitution can be made in Equation 1, given above. The numerical values of the properties of superheated steam will be given in Installment 33 of this series. This table, or any other similar steam table, will give data that can be used in calculations without the necessity of using Equation 1 and specific heat data from Table 1. Calculations illustrating both methods will be given.

Example 1.

Problem.—The steam produced by a certain integral-superheater oil-field-type boiler has a temperature of 565° at a pressure of 365 lb. per sq. in abs. Determine:

(*a*) The number of degrees of superheat.

(*b*) The total heat required to generate 1 lb. of such steam from water at 150° F.

(*c*) The volume of 1 lb. of the steam leaving the boiler.

Solution.—(*a*) Referring to Table 2 (Saturated Steam—Pressure Table) of Installment 31, it is found that saturated steam temperature at a pressure of 365 lb. per sq. in. abs., is 436° F. The existing steam, as given, is 565° F. Then, the number of degrees of superheat is (500 — 436), or 129° F.

(*b*) Referring to Table 2 of the steam tables, it is found that the total heat of dry saturated steam at 365 lb. per sq. in. abs. is 1,204.5 B.t.u. per lb.

Referring to Table 1 of the steam tables, Installment 31, it is found that the total heat of the water at 150° F. is 117.87 B.t.u. per lb.

The heat added in the boiler to produce dry saturated steam, then, is 1,204.5 — 117.9, or 1,086.6 B.t.u. per lb. (This would represent the factors $h_f + h_{fg}$ in Equation 1.).

From Table 1, the mean specific heat of the steam is found to be 0.659.

So, using Equation 1,

$$h = 1{,}086.6 + 0.659\ (129) = 1{,}171.6 \text{ B.t.u.}$$

This represents the amount of heat added by the boiler and superheater to 1 lb. of steam. The value can be obtained directly by referring to the superheated steam table in Installment 33 to obtain 1,290 B.t.u. per lb. as the total heat content above 32° F. in B.t.u. per pound. Subtracting the heat of the liquid at 150° F.,

$$h = 1{,}290 - 117.9 = 1{,}172.1 \text{ B.t.u./lb.}$$

This value checks very closely with the value obtained by the first method.

(*c*) Referring to Installment 33 (superheated steam tables), the volume of 1 lb. of the superheated steam is read directly (except for interpolation) as 1.566 cu. ft.

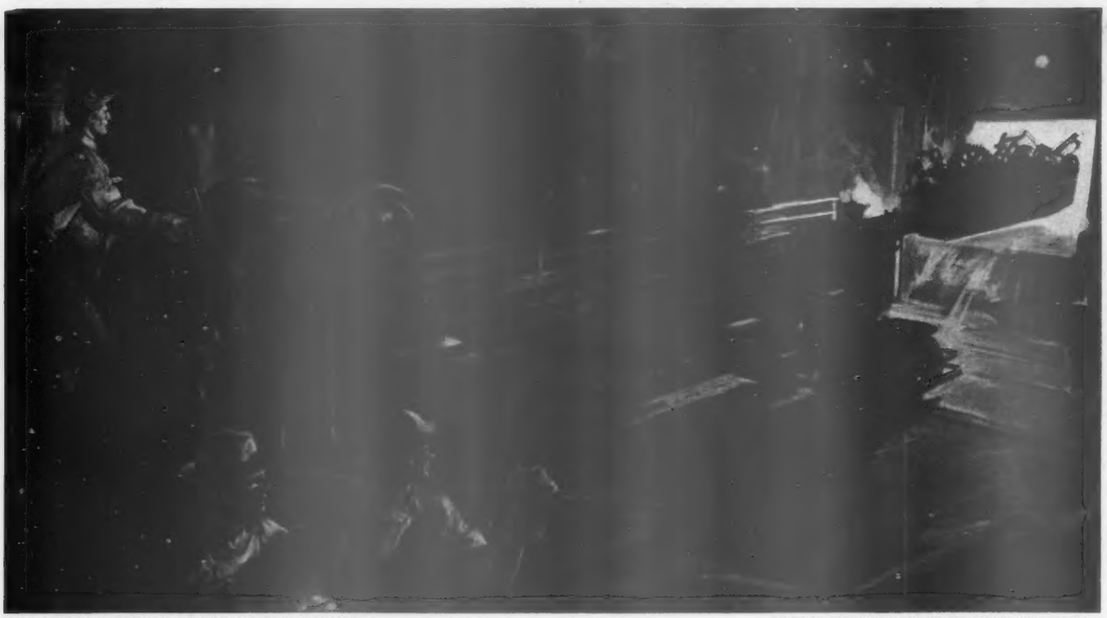
Later discussion in this series will point out the advantages that can possibly be realized from the use of superheated steam. It will also be pointed out that the higher the degree of superheat the greater will be the advantages obtained, within certain limits. A given superheater represents a definite additional investment that can be justified only by savings that it promotes. So when a superheater is in use, full advantage should be taken of its possibilities. In order to do this, attention should be given to means of preventing (1) the discharge of free water from the boiler into the lines leading to the superheater, or (2) the condensation of water in the lines between the boiler and superheater.

*Taken from "Steam, Air and Gas Power," Severns and Degler, 2nd ed., John Wiley & Sons, 1933.

TABLE 1—MEAN SPECIFIC HEAT OF SUPERHEATED STEAM

Steam press., lb. per sq. in. abs.	Sat. temp. (°F.)	Actual steam temperature, °F.									
		200	250	300	350	400	450	500	600	700	800
10	193.21	0.486	0.469	0.468	0.466	0.466	0.466	0.467	0.469	0.472	0.476
15	213.03	....	0.484	0.478	0.475	0.472	0.472	0.472	0.473	0.476	0.480
20	227.96	....	0.500	0.488	0.482	0.478	0.476	0.476	0.477	0.479	0.483
50	281.01	....	....	0.547	0.523	0.510	0.503	0.499	0.495	0.494	0.496
100	327.83	....	....	....	0.590	0.558	0.542	0.530	0.519	0.514	0.514
150	358.43	....	....	....	....	0.609	0.580	0.562	0.542	0.533	0.530
200	381.82	....	....	....	....	0.659	0.619	0.593	0.564	0.551	0.542
250	400.97	....	....	....	....	....	0.661	0.625	0.586	0.568	0.560
300	417.33	....	....	....	....	....	0.700	0.656	0.607	0.585	0.573
400	444.58	....	....	....	....	....	0.778	0.726	0.652	0.619	0.601

Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma



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FROM AN ORIGINAL DRAWING BY ORISON MACPHERSON

STEEL MEN USE SCRAP FOR MAXIMUM WAR-STEEL PRODUCTION

Like coast artillerymen in action with huge railway guns, skilled steelworkers maneuver their hundred-ton charging machines on tracks up and down the batteries of open-hearth furnaces, charging load after load of scrap metal into the seething cauldrons to make strong, fighting steels. Millions of tons of steel scrap are required to keep these war furnaces going twenty-four hours a day, seven days a week.

In adjoining mill yards trained scrap-men load the charging boxes—rush them up to the charging line. Steel scrap, and plenty of it, is vital to making quality battle-steels at a record breaking pace. In the open-hearth operation scrap quickens the process—makes possible efficient use of the natural resources, iron ore, coking-coal and limestone.

Helping men of steel to obtain scrap now for their war furnaces enlists every industry and business—every farmer and householder. It partners everyone with the steel workers who are fighting this war with their skill and will-to-do.

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PITTSBURGH, PENNSYLVANIA

PARTNER TO INDUSTRY IN WAR PRODUCTION

J&L STEEL

Journalog

A FEATURE OF THE OIL AND GAS JOURNAL

AUGUST 13, 1942

No. 14

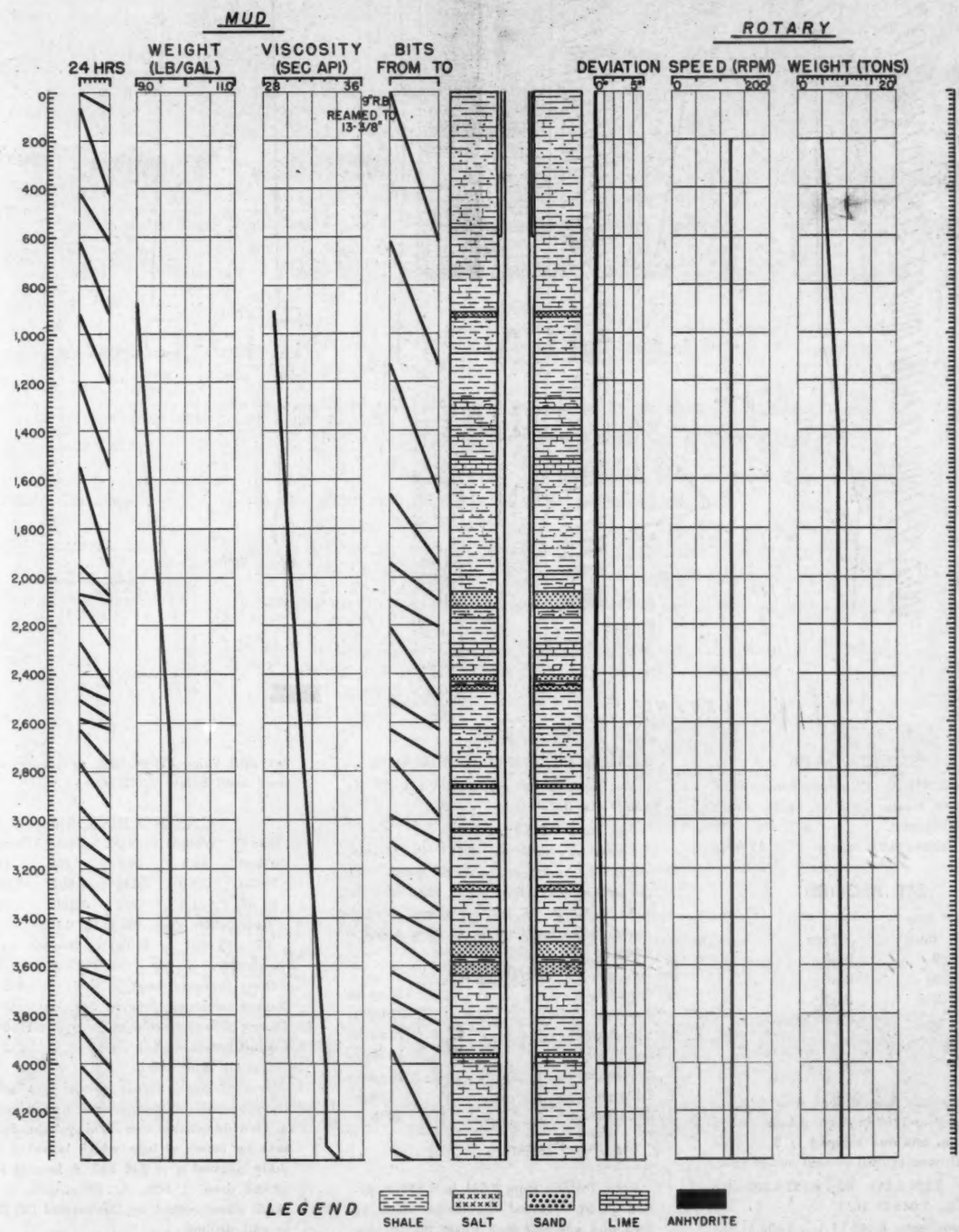
CONTINENTAL OIL CO. 1 MUELLER

467 ft. NE of SW line and 467 ft. NW of SE line of 116.86-acre lease, in F. Hamilton Survey, Abstract 335, Montague County, Texas

W. B. OMOHUNDRO

CONTRACTOR

Discovery Well of Salona Pool, Montague County, Texas



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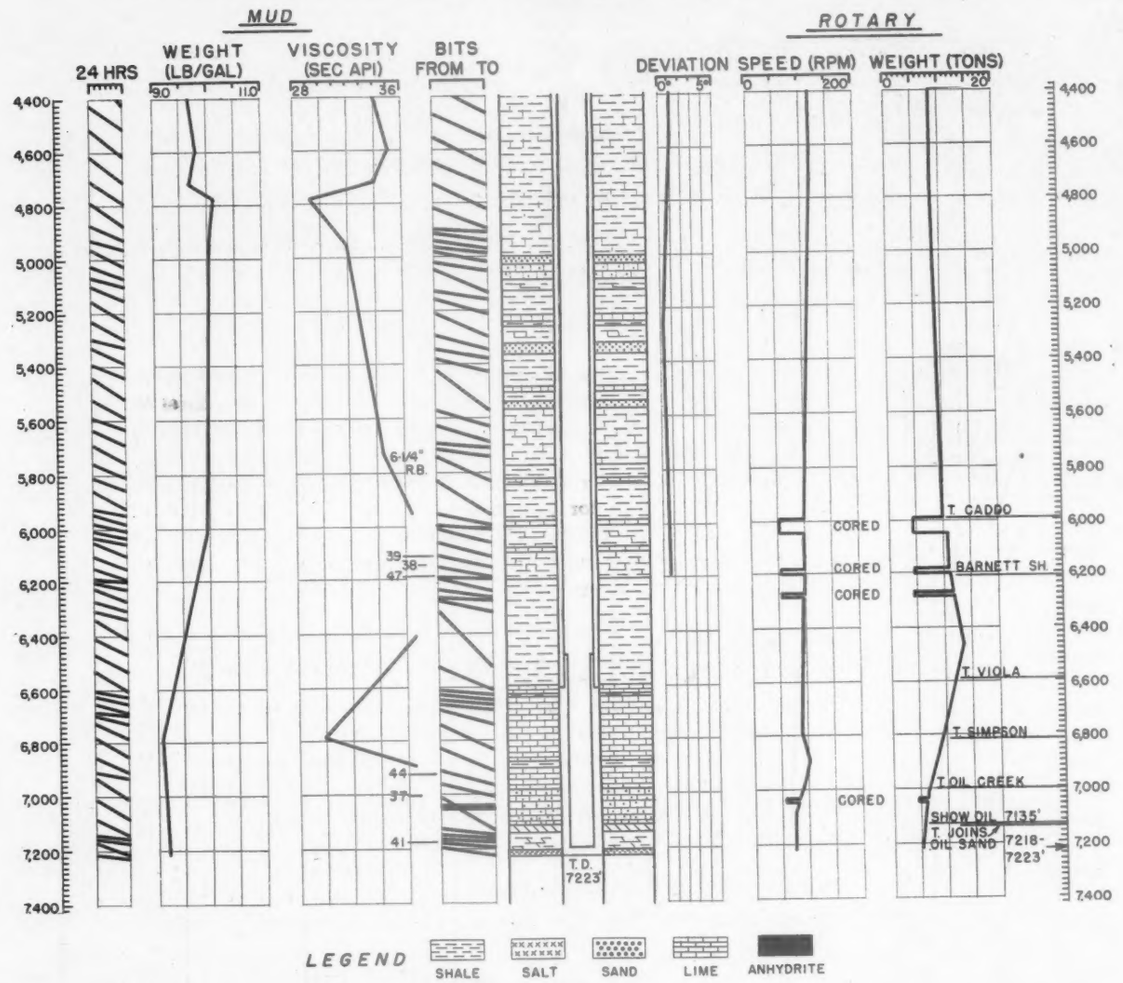
Journalog

Discovery Well of Salona Pool, Montague County, Texas (Continued)



DRILLING DATA

Elevation 994 ft. (All measurements from 1 ft. above rotary table or 13 ft. above ground level.)

Elapsed drilling time rotary ..... 87 days

BIT RECORD

No.	Size (in.)	Type
42	9	Rock
29	6¼	Rock
1	4½	Rock
2	6	Core heads
74		

Note: Surface hole drilled with 9-in. bit and reamed to 13⅜ in. Part of hole drilled with 6¼-in. bits and reamed to 9 in. One 4½-in. bit used to drill cement out of liner.

Cored: 5,996-6,051 ft.; 6,192-6,200 ft.; 6,271-81 ft., 7,040-45 ft.

Drill-stem tests: 6,002-51 ft.; 6,606-21 ft.; 6,828-6,905 ft., 7,132-44 ft.; 7,151-64 ft.

Electric logs run to: 6,590 ft.; 6,697 ft.; and 7,218 ft.

Pay sand 7,218-7,223 ft.

Swabbing tests: At 6,621 ft. 14 bbl. swabbed through tubing in 12 hours. Casing pressure 120 lb.; 550 ft. fluid in hole.

At 6,690 ft. 55 bbl. swabbed through casing, lowering fluid level from 5,100 to 6,300 ft.

MUD USED

Baroid	828 sacks
Aquagel	639 sacks
Native mud	22 sacks
Stabilite	13 sacks
Quebracho	18 sacks
Fibrotex	1 sack
Chemical	30 lb.

Rig: Diesel rotary.

Note: Drilling from 6,621 to 6,731 ft. carried on by reversed circulation, using oil. Two and one-half inch upset tubing used for drill string. Three-inch drill pipe and mud used below 6,731 ft.

CASING RECORD

Size	Weight	Length	Set at	Cement
10¾-in.	40.5	586	600	450
7 -in.	22.0	6,652	6,602	1,000
5 -in.	15.0	730	7,200	100

Completion date: May 16, 1942.

I.P. 369 bbl. in 24 hours through a ¾-in. choke.

Tubing pressure, shut in ..... 850 lb.

Tubing pressure, flowing ..... 25 lb.

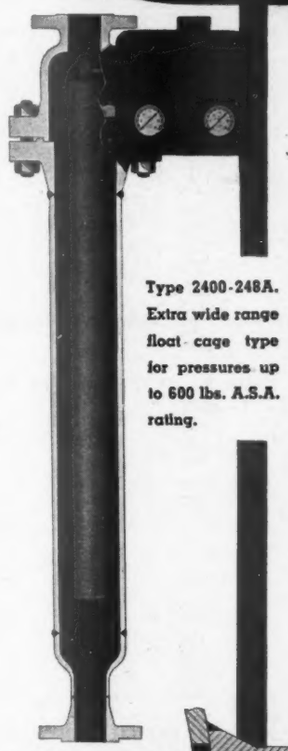
Casing pressure, shut in ..... 1150 lb.

Casing pressure, flowing ..... 410 lb.

Gas-oil ratio 480-1.

Present status: Well is now producing its allowable of 320 bbl. per day through a 13/64-in. choke, less 10 days' shutdown time for month of July, which leaves a net daily allowable of 216 bbl. A second test of the area, 1 Mrs. A. Richardson, is a south offset owned by Continental Oil Co., is still drilling.

FOR ALL APPLICATIONS STANDARDIZE ON FISHER LEVEL-TROLS



Type 2400-248A. Extra wide range float cage type for pressures up to 600 lbs. A.S.A. rating.

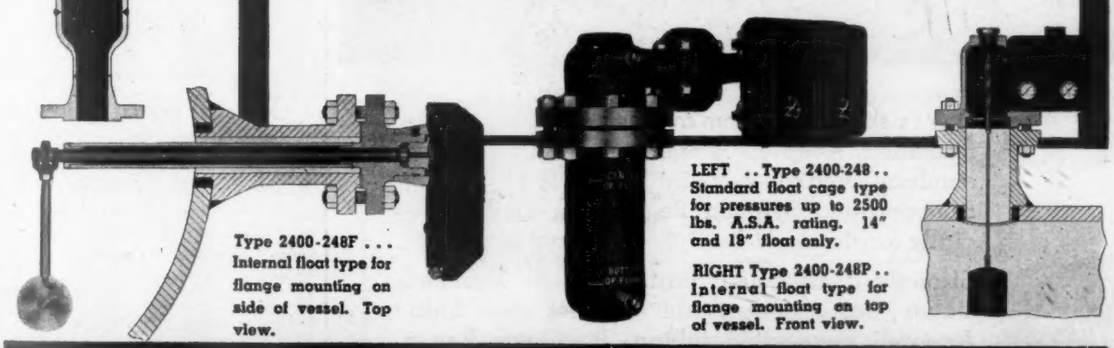
Now you can standardize on ONE type of Liquid Level Controller for your entire plant requirements. FISHER LEVEL-TROLS . . . the finest of all Level Controllers . . . are available in many designs for every service requirement.

Float cage types with screwed or flanged equalizing connections or internal float types for mounting on the top or side of vessels. Furnished with floats 14" to 120" in length to meet varying service requirements. Suitable for controlling liquids of all specific gravities at all pressures and temperatures.

ALL LEVEL-TROLS FEATURE:

1 — 100% pneumatic type pilot insures maximum sensitivity.
2 — Pilot relay speeds response to level change.
3 — Torque tube construction assures trouble-free operation.
4 — Throttling range adjustment affords wide range of control.
5 — Level position adjustment for resetting liquid level.

Fisher Level-Trols are completely illustrated and described in Bulletin F-1 now available. Your free copy will be sent on request.



Type 2400-248F . . . Internal float type for flange mounting on side of vessel. Top view.

LEFT . . Type 2400-248 . . Standard float cage type for pressures up to 2500 lbs. A.S.A. rating. 14" and 18" float only.

RIGHT Type 2400-248P . . Internal float type for flange mounting on top of vessel. Front view.

FISHER

Estimating Oil Reserves From Production-Decline Rates

(Continued from Page 48)

TABLE 7—ANNUAL DECLINE RATE = 7%

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
1	0.935	0.935	0.908	0.921
2	.874	1.808	1.708	1.757
3	.816	2.625	2.414	2.515
4	.763	3.388	3.036	3.203
5	.713	4.100	3.585	3.827
6	.666	4.767	4.068	4.393
7	.623	5.390	4.495	4.907
8	.582	5.972	4.871	5.373
9	.544	6.516	5.202	5.796
10	.508	7.024	5.495	6.180
11	.475	7.499	5.752	6.528
12	.444	7.943	5.979	6.844
13	.415	8.358	6.180	7.131
14	.388	8.746	6.356	7.391
15	.363	9.109	6.512	7.627
16	.339	9.448	6.649	7.841
17	.317	9.764	6.770	8.036
18	.296	10.060	6.877	8.212
19	.277	10.337	6.971	8.372
20	.258	10.595	7.054	8.517
21	.242	10.837	7.127	8.649
22	.226	11.062	7.192	8.769
23	.211	11.273	7.248	8.877
24	.197	11.470	7.299	8.975
25	.184	11.654	7.343	9.064
26	.172	11.827	7.382	9.145
27	.161	11.987	7.416	9.219
28	.150	12.138	7.446	9.285
29	.141	12.278	7.473	9.346
30	.131	12.409	7.496	9.401

TABLE 8—ANNUAL DECLINE RATE = 8%

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
1	0.926	0.926	0.899	0.912
2	.857	1.783	1.685	1.732
3	.794	2.577	2.371	2.470
4	.735	3.312	2.970	3.133
5	.681	3.994	3.494	3.729
6	.630	4.623	3.951	4.265
7	.584	5.206	4.351	4.747
8	.540	5.747	4.700	5.180
9	.500	6.247	5.005	5.569
10	.463	6.710	5.271	5.919
11	.429	7.139	5.504	6.233
12	.397	7.536	5.707	6.516
13	.368	7.904	5.884	6.770
14	.341	8.244	6.040	6.999
15	.315	8.560	6.175	7.204
16	.292	8.852	6.293	7.389
17	.270	9.122	6.397	7.555
18	.250	9.372	6.487	7.704
19	.232	9.604	6.566	7.838
20	.215	9.819	6.635	7.959
21	.199	10.017	6.695	8.067
22	.184	10.201	6.748	8.164
23	.170	10.372	6.793	8.251
24	.158	10.529	6.834	8.330
25	.146	10.676	6.869	8.401

TABLE 9—ANNUAL DECLINE RATE = 9%

1	0.917	0.917	0.891	0.903
2	.839	1.757	1.660	1.706
3	.768	2.524	2.324	2.419
4	.704	3.228	2.898	3.054
5	.646	3.875	3.395	3.619
6	.593	4.467	3.825	4.123
7	.544	5.011	4.198	4.572
8	.499	5.510	4.520	4.972
9	.458	5.968	4.799	5.328
10	.420	6.388	5.040	5.645
11	.385	6.773	5.249	5.927
12	.354	7.127	5.430	6.179
13	.324	7.451	5.587	6.403
14	.298	7.749	5.722	6.603
15	.273	8.022	5.839	6.781
16	.250	8.272	5.941	6.939
17	.230	8.502	6.029	7.080
18	.211	8.712	6.105	7.206
19	.193	8.906	6.171	7.318
20	.177	9.083	6.227	7.417

TABLE 10—ANNUAL DECLINE RATE = 10%

1	0.909	0.909	0.883	0.904
2	.827	1.736	1.640	1.605
3	.751	2.487	2.290	2.393
4	.683	3.170	2.847	3.009
5	.621	3.791	3.325	3.552
6	.565	4.356	3.734	4.032
7	.513	4.869	4.086	4.455
8	.467	5.335	4.387	4.829
9	.424	5.759	4.645	5.159
10	.386	6.145	4.867	5.450
11	.351	6.495	5.057	5.707
12	.319	6.814	5.220	5.934
13	.290	7.104	5.360	6.134
14	.263	7.367	5.480	6.310
15	.239	7.606	5.583	6.466
16	.218	7.824	5.671	6.604
17	.198	8.022	5.746	6.726
18	.180	8.202	5.811	6.833
19	.164	8.365	5.867	6.928
20	.149	8.514	5.915	7.012

TABLE 11—ANNUAL DECLINE RATE = 11%

1	0.901	0.901	0.875	0.887
2	.812	1.713	1.619	1.664
3	.731	2.444	2.251	2.343
4	.659	3.102	2.788	2.937
5	.593	3.696	3.244	3.456
6	.535	4.230	3.632	3.911
7	.482	4.712	3.962	4.309
8	.434	5.146	4.243	4.657
9	.391	5.537	4.481	4.961
10	.352	5.889	4.683	5.227
11	.317	6.206	4.855	5.459
12	.286	6.482	5.002	5.663
13	.258	6.750	5.126	5.841
14	.232	6.982	5.232	5.997
15	.209	7.191	5.321	6.133
16	.188	7.379	5.398	6.252
17	.170	7.549	5.463	6.356
18	.153	7.702	5.518	6.447
19	.138	7.840	5.565	6.527
20	.124	7.964	5.605	6.597

TABLE 12—ANNUAL DECLINE RATE = 12%

1	0.893	0.893	0.867	0.880
2	.797	1.690	1.598	1.643
3	.712	2.402	2.213	2.304
4	.636	3.037	2.731	2.878
5	.567	3.605	3.168	3.374
6	.507	4.111	3.536	3.805
7	.452	4.564	3.845	4.178
8	.404	4.968	4.106	4.502
9	.361	5.328	4.326	4.783
10	.322	5.650	4.511	5.026
11	.287	5.937	4.667	5.236
12	.257	6.194	4.798	5.419
13	.229	6.423	4.909	5.577
14	.205	6.628	5.002	5.715
15	.183	6.810	5.080	5.834
16	.163	6.973	5.147	5.937
17	.146	7.119	5.202	6.027
18	.130	7.249	5.249	6.104
19	.116	7.365	5.289	6.171
20	.104	7.469	5.322	6.229

TABLE 13—ANNUAL DECLINE RATE = 13%

1	0.885	0.885	0.860	0.872
2	.783	1.668	1.577	1.621
3	.693	2.361	2.176	2.265
4	.613	2.975	2.677	2.818
5	.543	3.518	3.094	3.293
6	.481	3.988	3.443	3.702
7	.425	4.423	3.734	4.053
8	.376	4.800	3.997	4.354
9	.333	5.133	4.180	4.613
10	.295	5.427	4.349	4.836

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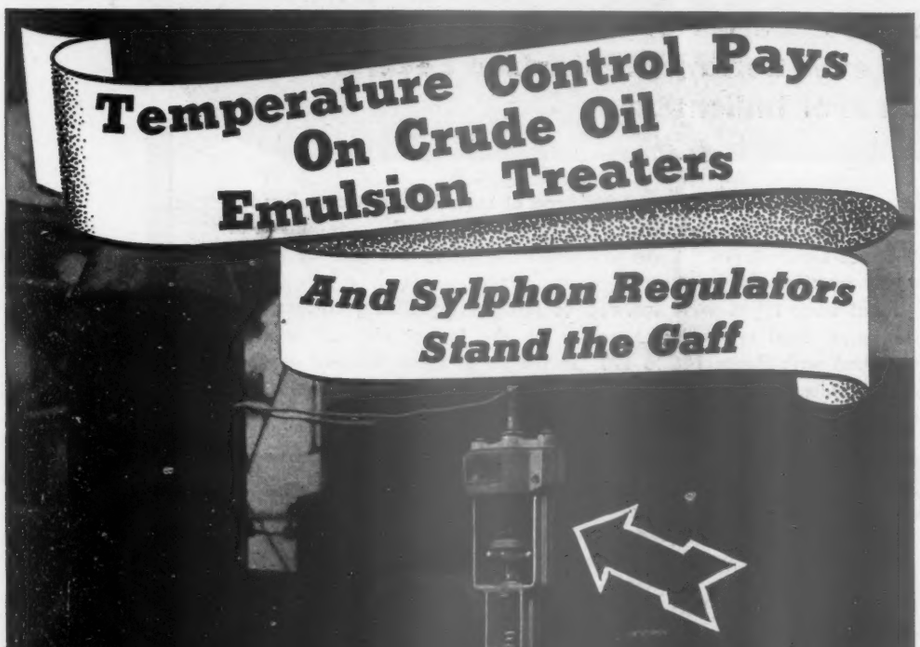

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Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
11	.261	5.688	4.491	5.027
12	.231	5.919	4.609	5.191
13	.204	6.123	4.707	5.332
14	.181	6.304	4.790	5.453
15	.160	6.464	4.858	5.557
16	.142	6.605	4.916	5.647
17	.125	6.730	4.964	5.724
18	.111	6.841	5.004	5.790
19	.098	6.939	5.037	5.847
20	.087	7.026	5.065	5.896

TABLE 14—ANNUAL DECLINE RATE = 14%

1	0.877	0.877	0.852	0.864
2	.770	1.647	1.557	1.601
3	.675	2.322	2.141	2.228
4	.592	2.914	2.624	2.762
5	.519	3.433	3.023	3.216
6	.456	3.889	3.354	3.604
7	.400	4.288	3.627	3.934
8	.351	4.639	3.854	4.215
9	.308	4.946	4.041	4.455
10	.270	5.216	4.196	4.659
11	.237	5.453	4.325	4.833
12	.208	5.660	4.431	4.981
13	.182	5.842	4.519	5.107
14	.160	6.002	4.591	5.214
15	.140	6.142	4.652	5.305
16	.123	6.265	4.701	5.383
17	.108	6.372	4.743	5.449
18	.095	6.467	4.777	5.506
19	.083	6.550	4.805	5.554
20	.073	6.622	8.828	5.595

TABLE 15—ANNUAL DECLINE RATE = 15%

1	0.870	0.870	0.845	0.857
2	.756	1.626	1.538	1.580
3	.658	2.283	2.106	2.191
4	.572	2.855	2.572	2.707
5	.497	3.352	2.955	3.142
6	.432	3.785	3.269	3.509
7	.376	4.161	3.526	3.819
8	.327	4.488	3.737	4.081
9	.284	4.772	3.910	4.302
10	.247	5.019	4.052	4.488
11	.215	5.234	4.169	4.646
12	.187	5.421	4.265	4.779
13	.163	5.584	4.343	4.892
14	.141	5.725	4.408	4.987
15	.123	5.848	4.460	5.067

TABLE 16—ANNUAL DECLINE RATE = 16%

1	0.862	0.862	0.837	0.849
2	.743	1.605	1.518	1.560
3	.641	2.246	2.072	2.155
4	.552	2.798	2.523	2.653
5	.476	3.274	2.889	3.070
6	.410	3.685	3.187	3.419
7	.354	4.039	3.429	3.711
8	.305	4.344	3.626	3.955
9	.263	4.607	3.786	4.160
10	.227	4.833	3.917	4.331
11	.195	5.028	4.022	4.474
12	.168	5.197	4.109	4.594
13	.145	5.342	4.179	4.694
14	.125	5.467	4.236	4.778
15	.108	5.575	4.282	4.848

TABLE 17—ANNUAL DECLINE RATE = 17%

1	0.855	0.855	0.830	0.842
2	.731	1.585	1.500	1.542
3	.624	2.210	2.039	2.122
4	.534	2.743	2.475	2.604
5	.456	3.200	2.826	3.003
6	.390	3.589	3.109	3.335
7	.333	3.923	3.337	3.610
8	.285	4.207	3.521	3.838
9	.243	4.451	3.669	4.027
10	.208	4.659	3.789	4.184
11	.178	4.837	3.885	4.314
12	.152	4.987	3.963	4.422
13	.130	5.119	4.025	4.512
14	.111	5.230	4.076	4.586
15	.095	5.324	4.117	4.648

TABLE 18—ANNUAL DECLINE RATE = 18%

1	0.848	0.848	0.823	0.835
2	.718	1.566	1.481	1.522
3	.609	2.174	2.007	2.088
4	.516	2.690	2.428	2.553
5	.437	3.127	2.764	2.935
6	.370	3.498	3.023	3.250
7	.314	3.812	3.248	3.509
8	.266	4.078	3.420	3.722
9	.225	4.303	3.557	3.897
10	.191	4.494	3.667	4.041
11	.162	4.656	3.755	4.160
12	.137	4.793	3.825	4.258
13	.116	4.909	3.881	4.338
14	.099	5.008	3.926	4.404
15	.084	5.092	3.962	4.459

TABLE 19—ANNUAL DECLINE RATE = 19%

1	0.840	0.840	0.816	0.827
2	.706	1.546	1.463	1.503
3	.593	2.140	1.976	2.054
4	.499	2.639	2.383	2.504
5	.419	3.058	2.705	2.871
6	.352	3.410	2.961	3.170
7	.296	3.706	3.164	3.414
8	.249	3.955	3.324	3.613
9	.209	4.164	3.452	3.776
10	.176	4.339	3.553	3.909
11	.148	4.487	3.633	4.017
12	.124	4.611	3.696	4.105
13	.104	4.715	3.746	4.177
14	.088	4.803	3.786	4.236
15	.074	4.876	3.818	4.284

TABLE 20—ANNUAL DECLINE RATE = 20%

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
1	0.833	0.833	0.809	0.821
2	.694	1.528	1.446	1.485
3	.579	2.106	1.946	2.023
4	.482	2.589	2.339	2.458
5	.402	2.990	2.648	2.810
6	.335	3.325	2.891	3.095
7	.279	3.604	3.082	3.325
8	.233	3.837	3.232	3.512
9	.194	4.030	3.350	3.663
10	.161	4.192	3.443	3.785
11	.135	4.326	3.516	3.884
12	.112	4.438	3.574	3.964
13	.093	4.532	3.619	4.028
14	.078	4.610	3.654	4.080
15	.065	4.674	3.682	4.122

TABLE 21—ANNUAL DECLINE RATE = 21%

1	0.826	0.826	0.803	0.814
2	.683	1.509	1.429	1.468
3	.565	2.074	1.917	1.993
4	.467	2.540	2.297	2.414
5	.386	2.926	2.594	2.752
6	.319	3.245	2.825	3.023
7	.263	3.508	3.005	3.240
8	.218	3.725	3.146	3.415
9	.180	3.905	3.255	3.555
10	.149	4.054	3.341	3.667
11	.123	4.177	3.407	3.757
12	.102	4.278	3.459	3.830
13	.084	4.362	3.500	3.888
14	.069	4.431	3.531	3.934
15	.057	4.489	3.556	3.971

TABLE 22—ANNUAL DECLINE RATE = 22%

1	0.820	0.820	0.796	0.808
2	.672	1.492	1.412	1.451
3	.551	2.042	1.888	1.963
4	.451	2.494	2.256	2.370
5	.370	2.864	2.541	2.694
6	.303	3.167	2.761	2.952
7	.249	3.416	2.931	3.157
8	.204	3.619	3.062	3.320
9	.167	3.786	3.164	3.450
10	.137	3.923	3.243	3.553

TABLE 23—ANNUAL DECLINE RATE = 23%

1	0.813	0.813	0.790	0.801
2	.661	1.474	1.395	1.434
3	.537	2.011	1.860	1.933
4	.437	2.448	2.216	2.327
5	.355	2.804	2.490	2.638

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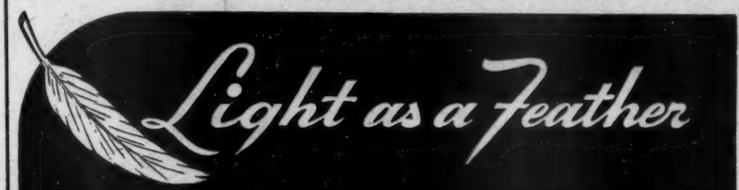

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(Continued from Page 59)

Year—	Annual production	Accumulated recovery	Discounted 6%	Accumulation 3%
6	.289	3.092	2.699	2.884
7	.235	3.327	2.860	3.078
8	.191	3.518	2.983	3.231
9	.155	3.673	3.078	3.352
10	.126	3.799	3.150	3.447

TABLE 24—ANNUAL DECLINE RATE = 24%

1	0.807	0.807	0.783	0.759
2	.650	1.457	1.379	1.417
3	.525	1.981	1.833	1.905
4	.423	2.404	2.178	2.287
5	.341	2.746	2.440	2.585
6	.275	3.021	2.640	2.819
7	.222	3.243	2.792	3.002
8	.179	3.422	2.907	3.145
9	.144	3.566	2.995	3.257
10	.117	3.682	3.062	3.345

TABLE 25—ANNUAL DECLINE RATE = 25%

1	0.800	0.800	0.777	0.788
2	.640	1.440	1.363	1.400
3	.512	1.952	1.806	1.876
4	.410	2.362	2.140	2.246
5	.328	2.689	2.392	2.533
6	.262	2.952	2.582	2.756
7	.210	3.161	2.726	2.929
8	.168	3.329	2.835	3.064
9	.134	3.463	2.916	3.168
10	.107	3.571	2.978	3.249

TABLE 26—ANNUAL DECLINE RATE = 26%

1	0.794	0.794	0.771	0.782
2	.630	1.424	1.348	1.385
3	.500	1.924	1.780	1.850
4	.397	2.320	2.104	2.208
5	.315	2.635	2.346	2.484
6	.250	2.885	2.527	2.697
7	.198	3.083	2.663	2.860
8	.157	3.241	2.765	2.986
9	.125	3.365	2.841	3.083
10	.099	3.465	2.898	3.158

TABLE 27—ANNUAL DECLINE RATE = 27%

1	0.787	0.787	0.765	0.775
2	.620	1.407	1.333	1.368
3	.488	1.896	1.755	1.821
4	.384	2.280	2.068	2.167
5	.303	2.583	2.301	2.432
6	.238	2.821	2.474	2.634
7	.188	3.009	2.603	2.789
8	.148	3.156	2.698	2.908
9	.116	3.273	2.769	2.998
10	.092	3.364	2.822	3.067

TABLE 28—ANNUAL DECLINE RATE = 28%

1	0.781	0.781	0.759	0.769
2	.610	1.392	1.318	1.353
3	.477	1.869	1.730	1.796
4	.373	2.241	2.034	2.132
5	.291	2.532	2.258	2.387
6	.227	2.760	2.423	2.580
7	.178	2.937	2.545	2.727
8	.139	3.076	2.635	2.838
9	.108	3.185	2.701	2.922
10	.085	3.269	2.749	2.986

TABLE 29—ANNUAL DECLINE RATE = 29%

1	0.775	0.775	0.753	0.763
2	.601	1.376	1.304	1.338
3	.466	1.842	1.706	1.771
4	.361	2.203	2.001	2.097
5	.280	2.483	2.216	2.342
6	.217	2.700	2.374	2.526
7	.168	2.868	2.489	2.665
8	.130	2.999	2.573	2.769
9	.101	3.100	2.635	2.848
10	.070	3.178	2.680	2.907

TABLE 30—ANNUAL DECLINE RATE = 30%

1	0.769	0.769	0.747	0.757
2	.592	1.361	1.289	1.324
3	.455	1.816	1.683	1.747
4	.350	2.166	1.968	2.063
5	.269	2.436	2.176	2.298
6	.207	2.643	2.326	2.474
7	.159	2.802	2.435	2.605
8	.123	2.925	2.514	2.704
9	.094	3.019	2.572	2.777
10	.073	3.092	2.614	2.832

TABLE 31—RESERVE FACTOR

Annual rate of decline, %	Bbl. producible per bbl. decline
1	36,500
2	18,250
3	12,170
4	9,130
5	7,300
6	6,080
7	5,210
8	4,560
9	4,060
10	3,650
11	3,320
12	3,040
13	2,810
14	2,610
15	2,430
16	2,280
17	2,150
18	2,030
19	1,920
20	1,830
21	1,740
22	1,660
23	1,590
24	1,520
25	1,460
26	1,400
27	1,350
28	1,300
29	1,260
30	1,220
31	1,180
32	1,140
33	1,100
34	1,070
35	1,040
36	1,010
37	990
38	960
39	940
40	910

TABLE 32—PAYOUT OF INVESTMENTS

Years	Break-even factor* 3% interest	Break-even factor* 6% interest
1.0	1.03	1.06
1.2	.861	.89
1.4	.740	.866
1.6	.649	.674
1.8	.579	.602
2.0	.523	.546
2.2	.476	.498
2.5	.421	.442
3.0	.353	.373
3.5	.305	.324
4.0	.269	.287
4.5	.241	.259
5.0	.218	.236
5.5	.200	.217
6.0	.184	.202
6.5	.173	.188
7.0	.160	.177
7.5	.150	.167
8.0	.142	.159
8.5	.134	.151
9.0	.128	.144

*AP/I = break-even factor
A = allowable, barrels per year
I = investment, dollars
P = income, dollars per barrel of oil produced, after royalty, taxes, and operating costs.

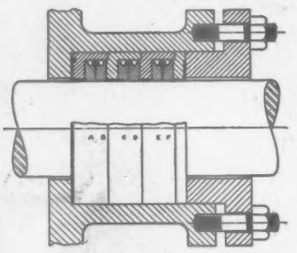
80,000 people waiting for the kick-off and no ball! Improbable? Sure! But lack of a "tremendous trifle" has brought equally unhappy moments to more than one engine or compressor operator.

Packing rings are tremendous trifles. But good rings, properly specified, correctly designed and carefully made, help to prevent delays, breakdowns, and scored rods. And good rings cost so little compared to the satisfaction they give.

France packings, for example. France packings are made by people who know your requirements. Theirs is an organization known not only for conventional packing but recognized for its development of special packings... packings for safely handling corrosive, deadly or inflammable gases, for vacuums or pressures up to 15,000 lbs.

We believe you'll feel more confident if you put your next packing job up to France.

PACKINGRAM
by
E. A. FRANCE



Type 402 France packing should be used on steam engines and air or gas compressors when lubrication is not being fed to the packing under force feed. The stuffing box must be sufficiently large in diameter and depth to permit ample material in rings and case.

The space between the rod and box, and the depth of box, are not the same for all size rods because wall thickness and ring diameter are increased by steps as the rod diameters increase. We recommend standard stuffing box sizes to engine builders to permit the use of a well proportioned packing.

Type 402 is furnished with three or four grooves containing rings made of iron, bronze, carbon-bakelite, or carbon. The 3 groove case is intended for a maximum pressure of 150 lbs. and the 4 groove case for 200 to 250 lbs., depending on the amount of oil for lubrication. Neither are recommended for superheated steam. Above 250 lbs. drop feed or splash lubrication is impractical which eliminates the use of this type for pressures requiring more than 4 grooves, except when carbon rings are furnished. More than 4 pairs of Carbon Rings may be used as no lubrication is required for carbon packing.

Type 402 is the least expensive and generally the most satisfactory packing within its qualified limits. The case, made up of annular cups, must be installed before the rod is connected to the cross-head, but the packing rings can subsequently be inspected without removing the case from the rod.

CAST IRON RINGS • SCUFF-PROOF CAST IRON RINGS • BRONZE RINGS • CARBON-BAKELITE RINGS • CARBON RINGS

Complete line of packing for all gases up to 15,000 lbs. pressure, as well as for superheated steam engines and gas engines.

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REFINERY ACTIVITY AND EXPANSION

Sketches of Plant Operators . . .

J. M. WADSWORTH, newly appointed manager for the Ozark Ordnance Works of Lion Chemical Corp., has probably witnessed more varied experiences in oil processing than any technologist actively engaged in the business. Mr. Wadsworth likes to relate how oil was first refined in California and bases his experiences upon the 4 years he spent with the Associated Oil Co., followed by construction work done in the employ of the Shell companies of that state. Then, for a period of 3 years, he specialized in technical problems being worked out in the Bureau of Mines and prepared a report on the utilization of fuel in refineries that later proved to be as valuable as a text book to the growing refining fraternity.

In 1919, he joined Cities Service Oil Co. as a construction superintendent, but soon thereafter was named general superintendent of the combined Empire refineries. He later was named plant superintendent for Pierce Petroleum Corp., and then joined the Independent Oil & Refining Co., as its vice president and general manager. This company merged with Phillips Petroleum Co. at a later date, and Mr. Wadsworth was named superintendent of all Phillips plants. He resigned this work in 1941 to represent Foster Wheeler Corp. and traveled extensively in Europe as well as in this country.

Mr. Wadsworth is a graduate of Leland Stanford University and follows woodworking as a hobby.

Small Refiners to Pool Rail Shipments to East

Detailed plans are expected to be completed within a week for increasing shipments of petroleum products from the southwestern fields and refinery centers to the rationed eastern states.

These plans will provide for participation by small refiners and suppliers who thus far have not been incorporated in the "solid train" program recently instituted by the Office of Defense Transportation.

At a meeting in Dallas, Tex., several days ago, tentative plans were discussed and a committee was named to work out the details and call another meeting in Dallas for Tuesday. W. T. Long, Jr., deputy assistant director of ODT freight section, heads the committee.

Since January 1, shipments of petroleum have increased tenfold to an average of 800,000 bbl. daily over railroad lines from the southwestern fields to the eastern seaboard through the joint efforts of ODT working with the Association of American Railroads, railroad-operating officers of the petroleum industry, and the OPC.

With 66 separate routes mapped out and others being planned out of Texas, Oklahoma, Mississippi, and Louisiana to eastern points, each route is given a symbol number. When a train leaves its point of origin, the symbol is telegraphed to ARR and ODT offices, together with the departure time and date. Then, as the train is delivered to each connection on the schedule, it is identified by its symbol and the record of the delivery is reported by wire.

Almost 50 railroads participate in the 66 schedules now in progress. Return movement of empty cars to the production fields is handled in the same manner as the eastbound loads, solid trains moving on designated schedules and reported to the controlling offices of ODT and ARR by symbol numbers.

North Louisiana-Texas Refiners Technical Meeting to Discuss Pumps

SHREVEPORT, La.—Taking full cognizance of the desire and need to get the greatest service out of their present equipment and learn of new developments in design, refiners in the North Louisiana-Arkansas area will meet under the sponsorship of the Western Petroleum Refiners Association, at the Washington-Youree Hotel here on August 14 at 4 o'clock and hear a paper on the subject by Drew T. Whiting and K. P. Hurley, of Ingersoll-Rand Co. According to Mr. Whiting, who will present the paper, the general subject is too great to cover in one presentation so he will read only a summary of the work that has been recently accomplished and will answer questions on specific subjects. He says: "In recent years many changes in refinery operations have occurred, and many new refining processes have been introduced. Keeping pace with the trends, pump manufacturers have adjusted their operations and made changes in pump designs to meet these situations."

Lantern slides will be used to illustrate, and there will be the usual round-table discussion. At the conclusion of the prepared paper, Mr. Whiting will talk extemporaneously on some of his experiences and observations in recent months as he has traveled over the country and come in direct contact with many intricate operating problems.

With splendid records of service and achievement, Messrs. Whiting and Hurley are in excellent position to discuss intimately with refiners their pump problems. Mr. Whiting has had nearly a quarter century of service with Ingersoll-Rand, and Mr. Hurley has been in active service for more than 16 years.

Expanding Jointly Operated Local Cracking Plant

OIL CITY, Pa.—Pennzoil Co., in cooperation with the Quaker State Oil Refining Corp., Wolf's Head Oil Refining Co. and Continental Refining Co., are making extensive alterations and additions to their local jointly owned cracking plant and, in cooperation with the Government, are erecting additional new facilities for the manufacture of aviation gasoline.

Pennzoil will operate the plant upon its completion and during the construction is supervising the general engineering. Arthur G. McKee has been appointed the general contractor.

Phillips Resumes Full Operations on Rubber

BORGER, Tex.—After about a month of slowed construction operations at the local 45,000-ton-per-year synthetic-rubber plant being built by Rubber Reserve Corp. for operation by Phillips Petroleum Co., full-scale activity has been ordered resumed. This is interpreted to mean that the original plans whereby butane is to be processed into butadiene and then to buna-S will be carried out and that the investigation of alternate processes will go on with only subsequent construction to be guided by these findings.

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WHO'S WHO IN REFINING

Continental Oil Co.

STRATEGICALLY located refineries of Continental Oil Co. give the concern's producing, manufacturing and marketing departments unusual versatility and scope of operation.

The company's nine refineries are scattered in eight states, New Mexico having two plants. Refineries located in Wyoming, Montana, Colorado and New Mexico give the company a particularly strong position in the Rocky Mountain territory, although nearly half of the total crude-processing capacity is contained in the largest plant operated at Ponca City, Okla., the home office.

The newest refinery is at Lake Charles, La., where some of the most modern processing equipment and technique developed immediately before outbreak of the war is installed and practiced. Nucleus of Continental's Ponca City, Okla., refinery was acquired by purchase of the old Marland Oil Co., several years ago. The purchase also gave the continuing company control of its Wichita Falls, Tex., refinery, although the Texas and Oklahoma plants, as they were originally acquired, are hardly recognizable now because of improvements made in the intervening years.

As one of the larger Mid-Continent refinery operators, Continental is contributing extensively to the production of war materials and is planning or considering other manufacturing improvements which will extend its position in this direction. Late last year the company completed installation of a new cracking unit at Ponca City which contributes to the production of high-octane blending stock. The company is also installing equipment at its Oklahoma refinery to produce aviation-gasoline alkylate and for expansion of the recovery of lubricating oils and high-melting-point waxes.

SUMMARY OF OPERATIONS

Location—	Capacity, bbl. daily— Crude	Cracking
Ponca City, Okla.	26,000	14,500
Baltimore, Md.	7,500	3,500
Lake Charles, La.	8,000	4,000
Wichita Falls, Tex.	5,000	2,600
Glenrock, Wyo.	3,400	1,800
Farmington, N. M.	750	.....
Artesia, N. M.	1,500	640
Lewistown, Mont.	1,225	.....
Denver, Colo.	2,700	1,500
Total	56,075	28,540

Refinery operations of Continental are adequately supported by producing and crude-oil transportation departments. Distribution of finished products is facilitated by a substantial interest in Great Lakes Pipe Line Co., which operates a gasoline line to Kansas City, Mo.; Omaha, Neb.; Des Moines, Iowa; Minneapolis, Minn., and Chicago.

In addition to its extensive oil-producing operations, Continental has natural-gasoline plants in Oklahoma, Louisiana, Texas, and New Mexico, with combined capacity of 245,000 gal. daily. The plants also are capable of producing 125,000 gal. of liquefied petroleum gas daily.

Refinery operations are under the general direction of Walter Miller, vice president in charge of manufacturing, and Harold G. Osborn, manager of manufacturing. L. L. Davis is supervisor of the process division; B. H. Lincoln is chief chemist and M. E. Clawson chief engineer.

Refinery superintendents are listed by plants as follows: D. R. Johnson, Ponca City; J. W. Brown, Baltimore; J. E. Fenex, Lake Charles; D. H. Hyler, Wichita Falls; J. A. Ramsey, Glenrock; L. P. Woods, Farmington; Charles Morgan, Artesia; J. A. Mann, Lewistown; L. L. Smith, Denver, and Fred S. Nesmith, Riverside, Tex., where a clay plant is operated.

Assistant superintendents are: W. M. Cooke, Lake Charles; J. M. Jones, Baltimore; James P. Markey, Wichita Falls; and H. H. Kinnaird, Glenrock.

●

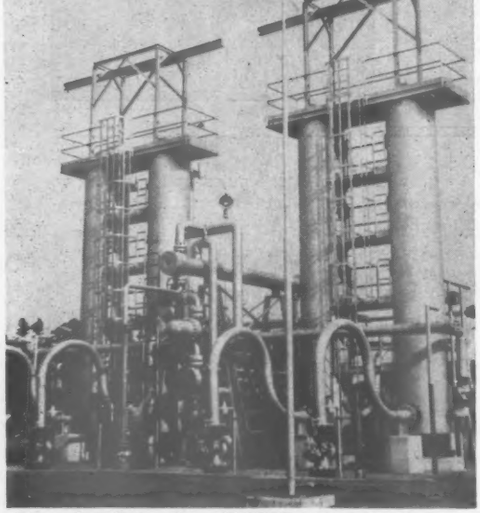
Synthetic Rubber Plants in Chicago Area to Cost $90,000,000

GARY, IND.—After visiting the site of the new plant of Rubber Synthetics, Inc., located across the road from the Cities Service refinery here, President William B. Plummer said an investment of $90,000,000 will be made in the facilities for making all components of the synthetic rubber and for polymerizing them on the grounds. This estimate is in contrast with many and varied earlier estimates of expenditure and represents the first announcement of a total cost following the recent publicity given the subject and base upon farm-bloc efforts to force the production of rubber from grain alcohol. The attitude of the petroleum industry has been consistently to make the rubber substitutes from whatever hydrocarbons are quickly and adequately available and which processing caused the consumption of the least vital war materials. The announcement of the cost estimate by Dr. Plummer indicates that construction and operating items have been completed in greater detail than the recent open discussions of the problem suggested.

MORE AND MORE GAS PLANTS Are Using *Florite* for dehydration

Because of its LONGER LIFE and HIGH DRYING EFFICIENCY

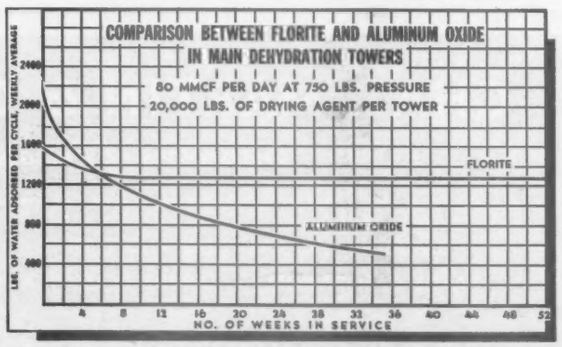
Many Natural Gas Companies, Chemical Companies and others are now standardizing on FLORITE DESICCANT—the new drying agent for gases and liquids —because of its *superior performance*. The largest natural gas dehydration plant in the United States, and one of the most widely known Chemical Companies in the world, (names on request) are included in this rapidly expanding group of satisfied users.



Recent Installation Using FLORITE (name on request).

FLORITE has two advantages over competitive drying agents. First—its ability to selectively adsorb a relatively constant weight of water, day after day and week after week as indicated in the accompanying chart. Second—its very high drying efficiency where bone dry gases and liquids are required, such as the dehydrating of natural gas, propane, gasoline, air, nitrogen, carbon dioxide, refrigerants, etc.

FLORITE selectively adsorbs 4 to 20% of its weight in water, depending upon the particular application, and is regenerated by heating to 300-350°F. We invite correspondence on your particular drying problems. WRITE FOR DESCRIPTIVE LITERATURE.


COMPARISON BETWEEN FLORITE AND ALUMINUM OXIDE
IN MAIN DEHYDRATION TOWERS
80 MMCF PER DAY AT 730 LBS. PRESSURE
20,000 LBS. OF DRYING AGENT PER TOWER
FLORITE
ALUMINUM OXIDE
LBS. OF WATER ADSORBED PER CYCLE, WEEKLY AVERAGE
NO. OF WEEKS IN SERVICE

The ability of FLORITE DESICCANT to adsorb a constant amount of water is illustrated in above graph, based on technical data furnished by user.

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Pipe-Line Activity

Work Progresses for Laying 24-In. Tex.-Ill. Pipe Line

In the first week of construction of War Emergency Pipelines, Inc.'s big line from Longview, Tex., to Norris City, Ill., work of laying pipe has gotten under way at seven parts of the project. Williams Brothers Corp. started south with a gang from Ravenna, Ark., and has gangs at the Red River and Little Missouri River crossings. O. E. Dempsey Construction Co.'s gang started north from Ravenna, Ark. Anderson Brothers' gang is going south from Little Rock, Ark., to meet Dempsey's gang near Gurdon. Oklahoma Contracting Co. has a gang working north from Little Rock which will meet another gang near Newport, Ark., which is going south from the Arkansas-Missouri boundary. Sheehan Pipe Line Construction Co. and Ray L. Smith are unloading at Harrisonburg and Marion, Ill.

A meat-cutter's union tried to stop unloading of pipe at Elmo, Mo., according to reports, insisting that the stringing contractor's men join their union. Unloading proceeded after some of the contractor's men were armed under the approval of the sheriff. Altogether 150 miles of 550 miles of 24-in. pipe for the project is now on the ground.

Pressure Welding Is Introduced Into Pipe-Line Construction

An innovation representing a marked departure from customary welding practices is now being introduced into pipe-line construction. This is the pressure welding process, licensed by Linde Air Products Co. to interests connected with El Paso Natural Gas Co., which have developed equipment for welding pipe in the field. A new company has been formed known as Pressure Welding, Inc., which is preparing to contract pipe-line welding. By the new process, welding is done without welding rods; pipe is heated by oxyacetylene flame and both ends are pressed together. The company now has equipment for welding pipe in sizes from 4-in. to 20-in. In addition to doing welding for Texas Pipe Line Co.'s project now getting under way in the trunk line extending north from Dallas, arrangements are being discussed for demonstrating the effectiveness of this process on several projects now under construction.

Construction Begins for Doubling Texas Pipe Line

Operations for doubling the trunk line of Texas Pipe Line Co. from northern Texas to southern Oklahoma started last week immediately following the letting of contracts to W. G. Hanrahan and N. A. Saigh for more than 113 miles of 8-in. and 10-in. The company is filling in between loops in the trunk line so as to have a double line from its refinery at West Dallas, Tex., to Stuart, Okla.

W. G. Hanrahan has a contract for laying 39 miles of 10-in. between the company's refinery at West Dallas and McKinney, Tex.; the first 20 miles of this section will be over a new right-of-way while the remaining 19 miles will parallel the company's existing line. The Hanrahan organization will use the new pressure-welding process by which ends of the joints are joined by heating without the use of a welding rod.

N. A. Saigh will lay 35 miles of 8-in. between Sherman station, Texas, and Armstrong station, Oklahoma, as well as 30.5 miles of 10-in. and 8.75 miles of 8-in. between Armstrong station and Coalgate, Okla.

American Liberty Prepares for Moving Pipe Line to Florida

Arrangements have been made for removing 6 to 7 miles per day from the 200-mile 8-in. crude-oil East Texas-Gulf Coast pipe line which American Liberty Pipe Line Co. will move to northern Florida. American Liberty has organized Trans-Florida Pipe Line Co. for transporting and relaying the pipe. Toddie L. Wynne is president of both companies.

The line is to link the Gulf Coastal canal system with the Atlantic canal system to provide for the use of barges to transport crude oil on the canal system.

Contracts provide for taking up the north half by Anderson Brothers, and the south half by Fredell Construction Co.

Pipe-Line Personalities . . . W. C. Kinsolving

W. C. KINSOLVING, general superintendent, Sun Pipe Line Co., Beaumont, Tex., accepted an appointment in Washington, D. C., as associate director of the Transportation Division, Office of Petroleum Coordinator. In entering his new duties he succeeds R. B. McLaughlin, who has returned to Houston, Tex., to resume activities as vice president and assistant manager of the Texas Pipe Line Co., and the Texas-New Mexico Pipe Line Co. Mr. McLaughlin's departure from government service and return to the operations of the pipe-line industry came about as a result of the fact that War Emergency Pipelines, Inc., asked that B. E. Hull, president of the Texas Pipe Line Co., be loaned to become vice president and general manager of the new organization building the 24-in. crude-oil line from East Texas to the southern Illinois-Indiana area. As a result, it was decided that the Government should exchange Mr. McLaughlin for Mr. Hull.

Mr. Kinsolving started out as a field worker for Sun Pipe Line Co. at Beaumont, Tex., in 1923, in the days when most lines were still being laid with screw pipe which required large gangs of men for carrying on construction and maintenance operations. In the course of years he progressed through the ranks to the position of general operating superintendent of the Sun and Yount-Lee Pipe Line Co. trunk systems. In 1930, Mr. Kinsolving was chief engineer in charge of the design and construction of one of the first gasoline pipe lines ever built, the Susquehanna Pipe Line Co. system in Pennsylvania, New York, and Ohio.

The new associate director of OPC transportation is a native of Corsicana, Tex. He received his college degree in electrical engineering from Cornell University.

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AVAILABLE SERVICES . .

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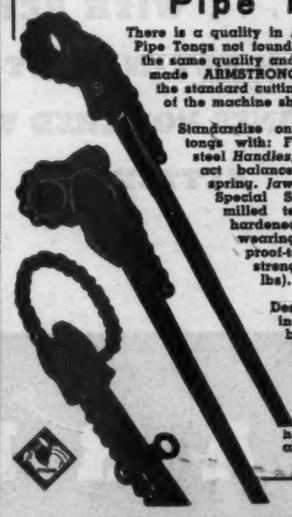
There is a quality in ARMSTRONG BROS. Pipe Tongs not found in ordinary tools—the same quality and tool sense that has made ARMSTRONG TOOL HOLDERS the standard cutting tools in over 90% of the machine shops and tool rooms.

Standardize on these better pipe tongs with: Forged high carbon steel Handles, heat treated to exact balance of stiffness and spring. Jaws drop forged from Special Steel with sharply milled teeth, heat treated, hardened and tested for wearing quality. Chains proof-tested to 2/3 catalog strength (3,600 to 40,000 lbs).

Design improvements include: Increased bearing of jaws on bar. Forged-in lugs in jaws that serve as chain guides and prevent chains from jamming. Large hardened bolts and alloy steel shackles.



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"The Tool Holder People"
304 N. Francisco Ave., Chicago, U.S.A.

OFFICIAL U. S. NAVY PHOTOGRAPH

THE YANKS ARE COMING . . . *This Time by Air!*

. . . . . WITH BETTER MEN FLYING BETTER PLANES POWERED WITH BETTER OIL!

Yes, the Yanks are on their way . . . by air this time, as well as by sea. And the story will be different when this hard hitting sky army of Uncle Sam goes into full action, thanks to better men, better equipment and better fuel. In appreciation for the part we have been privileged to have in oil for nearly a half century, we can't help but pay due tribute to the latter. In air combat the ability to get there in a hurry and maneuver at uncanny speed counts. Every extra mile per hour in climbing "upstairs," in diving, in zipping around turns, means vital points on the credit side of victory. The ingenuity of American Oil Men has put those extra miles per hour in the fuel tanks of our great army of the air.

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

In addition to a lapse in WPB regulations which leaves oil producers and drilling contractors without a means of securing material for development and maintenance work, there were other dark spots coming over the horizon last week. Principal one of these was the increasing shortage of skilled field workers which was becoming great enough to excite comment.

As a matter of fact, drilling contractors and production superintendents were expressing the opinion that field workers should be draft exempt and something should be done to prevent enticing of oil-field workers into other industries.

Temporary increased operating costs are secondary to the main consideration which is the possibility of an increased demand for petroleum which may lead to the eventual necessity of greatly expanded exploitation programs. With drilling crews gone to the Army and into other industries, this would be a practical impossibility now.

Already many drilling contractors are working their men on 12-hour shifts. In other cases, lease workers are working their regular shift for an oil company and then roughnecking a shift on a nearby drilling rig. In one case, one roughneck was on duty 48 hours continuously.

The effect on contract costs is obvious. Under the present labor regulations the use of two crews working 12-hour tours results in an increase in the labor bill of approximately 64 per cent. In addition there is a decrease in efficiency caused by working the longer hours. Necessity for close coordination of the various branches of the industry was shown last week when the allowable for Michigan was maintained at its previous level after it was found that there were no tank cars available to handle the increased output. The demand by refineries normally served by the state is around 7,000 bbl. daily more than the production and the hike was considered to satisfy this need. The Michigan method has been to build only as much pipe-line capacity as the settled production of a pool can supply, the flush being taken care of by tank-car shipment. With tank cars being needed to supply the East Coast demand, expansion of production from Michigan fields is difficult.

On the other hand, Texas allowable for August was increased last week by the Texas Railroad Commission with concurrence from OPC. Forty fields in the state producing crude oil valuable in the high-octane, toluene and rubber programs were allowed to increase their production 94,000 bbl. daily.

OKLAHOMA: A new pool has been opened in Carter County approximately 1½ miles north of the one-well Caddo pool and the second well in the recently discovered Northeast Luciene pool proved larger than the discovery well (p. 82).

OHIO: The Clayton pool of Perry County has been extended ½ mile northward and a good gas well extended the Brush Creek pool to southwest (p. 75).

ILLINOIS: A new area has been opened to production by completion of a Jefferson County wildcat as a large flowing well in the McClosky. A test southwest of the Bible Grove field, Clay County, has pipe set to test Aux Vases and McClosky saturation and the largest Trenton well in the Salem field has been completed (p. 80).

KANSAS: The Lindsborg field of McPherson County was extended northward by two good wells completed in the Viola lime and an eastward extension is reported to be flowing from the Simpson sand. A new pool is in prospect in Edwards County (p. 74).

SOUTHWEST TEXAS: Two important southeast extensions to the South Caesar field, Bee County, have been completed and are expected to cause an increase in operations in the field. The West Tuleta field was extended 1 mile southwest by a gas-distillate producer in the Carrizo-Wilcox sand (p. 70).

LOUISIANA GULF COAST: Production has been opened on the southwest flank of the old Avery Island salt dome, Iberia Parish, and a well on the east flank of the Pine Prairie dome, Evangeline Parish, is being prepared for a production test. A test 14 miles southwest of New Orleans, in St. Charles Parish, continues to log encouraging showings of oil (p. 71).

TEXAS GULF COAST: Two additional operations were added to the increasing play along the Wilcox trend and an important extension to the Mercy field has been completed. A test in the North Bay City area, Matagorda County, made a good flow on its first test and is being prepared for retesting (p. 77).

CALIFORNIA: An attempt to shut off water in Solano County's prospective gas discovery failed. An outpost to the Paloma distillate field is nearing pay depth and testing is under way at the second well in the Buena Park field (p. 73).

EAST TEXAS: A test in the Black Oak pool of Wood County reported a good oil show in the sub-Clarksville formation and is drilling ahead to the Paluxy sand. A deep test in Cherokee County continues to core ahead with no additional shows reported (p. 79).

NORTH TEXAS: A new Mississippian lime pool was opened in Young County and Ellenburger production was assured in northern Archer County when a test 1 mile north of Holliday flowed during completion operations. A new pool was also opened southwest of Truby in Jones County (p. 70).

PERMIAN BASIN: A second one-well pool has been opened in Lubbock County and an oil show was reported at a test midway between the Howard-Glasscock and Snyder pools. A northwest outpost to the Fullerton pool indicates an extension in that direction (p. 76).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended August 8, 1942)

	Oil	Gas	Dry	Total	Footage	Tl. comp. to date 1942	Tl. comp. to date 1941
N. Y., Pa., and W. Va.	47	13	3	63	166,423	2,183	3,535
Ohio	5	18	9	32	84,780	648	985
Indiana	2	0	6	8	10,786	219	311
Kentucky	0	3	1	4	10,336	194	391
Illinois	21	0	17	38	96,786	1,052	1,994
Michigan	4	3	4	11	26,952	434	508
Kansas	20	1	13	34	107,442	941	1,293
Nebraska	0	0	0	0	0	24	59
Missouri, Iowa	0	0	0	0	0	9	25
Oklahoma	5	1	8	14	45,143	773	1,114
Texas:							
North Central Texas	5	0	12	17	50,421	739	1,691
West Texas	18	0	1	19	85,052	926	1,283
Texas Panhandle	6	2	0	8	24,104	257	357
East Texas	3	0	4	7	34,370	255	653
Texas Gulf Coast	9	2	5	16	107,537	493	650
Southwest Texas	8	0	4	12	54,190	740	1,089
Total Texas	49	4	26	79	355,674	3,410	5,723
North Louisiana	9	0	1	10	50,609	361	392
Louisiana Gulf Coast	2	0	2	4	37,275	338	530
Total Louisiana	11	0	3	14	87,884	639	922
Arkansas	4	0	3	7	39,401	100	110
Mississippi and Southeast	0	0	2	2	8,621	47	150
Montana	6	5	1	12	21,103	111	160
Wyoming	4	0	0	4	14,325	61	108
Colorado, Utah	1	0	1	2	4,772	11	23
New Mexico	6	0	1	7	24,628	174	182
California	9	1	3	13	51,353	469	682
Total United States	194	49	101	344	1,156,409	11,499	18,275
Total previous week	184	57	125	366			
Week ended Aug. 9, 1941	468	62	144	674			

NORTH CENTRAL TEXAS

Young County Test Has Good Flow From Mississippian Lime

By ROBERT INGRAM

WICHITA FALLS, Tex. — A new Mississippi lime pool was opened in Young County last week by L. T. Burns 1 Lorah Williams, Block 257, T.E.&L. Survey, 2 miles east of True. The pay zone at 4,882-4,910 ft. had been perforated with 48 shots, cleaned out, and then treated with 2,000 gal. of acid. It then began flowing steady at the rate of 40 bbl. an hour and then was closed in with tanks filled. Official gage will be taken this week.

Meantime, 9 miles northwest of Graham, Standard Oil Co. of Texas and Hanlon-Buchanan, Inc., 1 N. G. Holbert, a 5,500-ft. test in the SW E½ Section 726, T.E.&L. Survey, was rigging up rotary after setting surface pipe at 328 ft. The same operators were drilling in shale at 2,100 ft. at 1 J. W. Daws, a 4,100-ft. test in the northwestern part of Section 751, T.E.&L. Survey, 11 miles west of Newcastle and southwest of Profitt.

In extreme southeastern Young County, where Hanlon-Buchanan recently opened a new Strawn sand pool, two offsets being drilled by the same company, appeared to be dry. The 1 Street, J. Conner Survey, north offset to the discovery, was shut down for orders at 2,671 ft., and the 2 Street, northeast offset in the same survey, was shut down at 3,200 ft. The discovery was completed for 227 bbl. from sand at 2,583-92 ft.

Montague Wells Progress

Sinclair Prairie Oil Co. 2 Henderson, Block 32, W. E. Martin Survey, southern Montague County, 2 miles east of Denver, drilled lime showing oil, probably the Nocona lime, from 6,318-39 ft. and from 6,427-42 ft. and was drilling below 6,602 ft. in dry lime. This test is an offset to a junked hole which showed for a possible producer at approximately the same level.

In the Forestburg Marble Falls pool of southeastern Montague County, Magnolia Petroleum Co., second company to enter the play in the pool, amended locations for 1 E. H. Medley to 467 ft. from the northwest and northeast lines of a 90.58-acre lease in the G. W. Fanning Survey, a west offset to the discovery well.

Southeast of the discovery, Sinclair Prairie 3 Jones, I. Singletary Survey, on a 30-minute drillstem test at 7,121-37 ft. recovered 250 ft. of oil-cut mud and was drilling ahead below 7,210 ft.

Newest wildcat in the county was in the Illinois Bend area in the northeast part of the county where R. C. Lipscomb 1 W. F. Harmon was staked on the northeast corner of the W. C. Winters Survey. The test is an Ohio Oil Co. farmout and will be supported by the Continental Oil Co. which is drilling two wildcats of its own in the county.

Ellenburger Pay Assured in Archer

First Ellenburger production in northern Archer County was assured at George Cooper 1 McKnight, 1 mile west of Holliday, Block 69, Wichita Valley Farm Lands Survey. The well flowed 25 bbl. of oil and no water in 3 hours through 1/64-in. tubing choke through perforations at 4,888-4,903 ft., total depth 5,028 ft. It has been completing for several weeks.

NORTH CENTRAL TEXAS COMPLETIONS

Wildcats

Archer County: C. T. Robertson 1 M. Kelly, SW SE Sec. 11, B.B.B.&C. Sur., A-47, dry, T.D. 1,254 ft.

Jack County: Joe Worsham 1 Hensley estate, T. Martinez Sur., A-388, 7 mi. S of Jacksboro, junked T.D. 5,295 ft.

Throckmorton County: British American 1 E. N. McCluskey, NE SW Sec. 263, B.B.B.&C. Sur., A-155, 4 mi. NW of Throckmorton, dry, T.D. 6,205 ft.

Wichita County: American Liberty 1 S. T. Tuttle, Jr., NW NW Sec. 174, Waggoner subd., 8 mi. N of Electra, dry, T.D. 5,026 ft.

Martin Properties 1 J. D. Cooper-B, Sec. 5, H. Hastie Sur., A-92, dry, T.D. 1,350 ft.

H. F. Smiley et al 1 W. L. Doyle, George Wheelwright Sur., A-320, dry, T.D. 1,255 ft.

Fields

Jennings-Howard, Montague County: Robert E. Jennings 1 Roxye Howard-B, Blk. 91, Kaufman C.S.L. Sur., dry, T.D. 4,006 ft.

Joy, Clay County: Shell 2 Mattie Clark, Lot 35, H. Williams Sur., A-704, flowed 900 bbl. after acid, pay 5,852 ft., T.D. 6,033 ft.

Orsburn, Cooke County: J. W. Baldwin 1 S. M. Rubrecht, T. W. Dickinson Sur., 1 mi. NE of Wilson pool, dry, T.D. 2,528 ft.

Rock Crossing, Wilbarger County: Humble 27 W. T. Waggoner estate-H, W½ SW SW Sec. 46, Blk. 4, H.&T.C. Sur., pumped 35 bbl., Ellenburger 3,808 ft., T.D. 3,817 ft.

Phillips 221 W. T. Waggoner, NW NW Sec. 44, Blk. 4, H.&T.C. Sur., T.D. 1,882 ft., gas-input well.

Phillips 222 W. T. Waggoner, SW SW Sec. 45, Blk. 4, H.&T.C. Sur., T.D. 1,879 ft., gas-input well.

Swastika, Archer County: White & Duncan 1 J. T. Richardson estate, W. McCune Sur., A-943, pumped 32 bbl., pay 1,230 ft., T.D. 1,240 ft.

Walnut Bend, Cooke County: Sinclair Prairie 10 N. P. Atkins, C. Furinash Sur., A-369, flowed 275 bbl., pay 4,850 ft., T.D. 4,875 ft.

Miscellaneous

Throckmorton County: Garlitz et al 1 E. S. Morrison, NE SW Sec. 2229, T.E.&L. Sur., dry, T.D. 1,703 ft.

New Jones County Pool Opened Southwest of Truby

FORT WORTH, Tex.—Probable new pool opener in Jones County last week was Lewis Production Co. 1 Grogan, M. R. Logorio Survey 253, ¾ mile southwest of Truby. It pumped 110 bbl. on a proration gage from the Tannehill sand at 2,125½-28 ft.

At the same time an extension to the North Avoca pool in northeastern Jones County was scored by T. L. Wheeler 1 A. E. Olson which flowed 152 bbl. from 3,226-38 ft. The well is in Section 19, Block 3, H.&T.C. Survey.

There was also a north extension to the Akard pool in Jones County at Merry Brothers & Perini 1 Collins, Subdivision 14, G. Martinez Survey 137. The well was being tested after plugs were drilled above a show in the Akard sand.

New Well at Northeast Novice

Anderson-Prichard 1 O. B. Featherstone, NW NW Section 52, Block 2, G.H.&H. Survey, Jones County, south offset to the 2 Coker, was drilling in sand at 3,011-30 ft., with hard lime at 3,030-32 ft. On early tests it was estimated making more than 200 bbl. of oil and some 3,000,000 cu. ft. of gas.

In the same county, Anderson-Prichard 2 Betty J. Mathews, H. Kegan Survey 420, was ready to drill in after setting 5½-in. casing at 3,886 ft. The gray sand, showing oil was logged at 3,885-92 ft.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Callahan County: Mikeworth & Smith 1 Boatwright, Sec. 12, D.&D.A. Sur., dry, T.D. 580 ft.

George Donnelly 1 H. M. Kennard, Sec. 9, E.T. Sur., old well, T.D. 1,500 ft., dry.

Fields

Allen & Ritchie, Palo Pinto County: Albert W. Adkinson 7 Allen & Ritchie, L. J. Pitts Sur., A-1289, flowed 30 bbl. through 2-in. tubing, natural, sand 1,504 ft., T.D. 1,510 ft.

Lewis, Jones County: Imholz et al 1 Otto Sosebee, Sec. 38, Blk. 15, T.&P. Sur., location abandoned.

Wimberley, Jones County: Deep Oil et al 1 Holloway, Sec. 23, Blk. 17, T.&P. Sur., dry, T.D. 2,244 ft.

SOUTHWEST TEXAS

Extension Wells May Increase South Caesar Field Activity

By F. L. SINGLETON

CORPUS CHRISTI, Tex. — Operations in the South Caesar field, Bee County, were expected to be increased following completion of two new producers which marked up important southeast extensions to production. Continental 1 M. T. Fox, 2,500 ft. southeast of production in the Charles Amsler Survey, perforated casing at 6,612-20 ft. and flowed 70 bbl. of 47.8-gravity oil in 12 hours through a $\frac{1}{16}$-in. choke. Tubing pressure was 3,135 lb. and casing pressure 2,240 lb., with the gas-oil ratio estimated at 20,000:1. The well is credited with having logged approximately 31 ft. of sand and it is possible that the well will be killed and recompleted in an attempt to lower the gas-oil ratio.

Due west of the above producer about 2,500 ft. and about 1,500 ft. south of Luling 1 W. B. Slick, Atlantic-Transwestern 1 Cotton perforated casing at 6,616-18 ft. with 12 shots, and the well is flowing pipe-line oil and wash water while cleaning out through a 3/32-in. choke. Gas-oil ratio was estimated at 1,000:1, which is about normal for the field. There was no showing of salt water. Total depth of the well is 6,620 ft. The rig is being moved 1,320 ft. south for 2 Cotton while midway between this producer and the Continental well Jay Simmons has spudded 2 Cotton which is about 2,000 ft. north of 1 Cotton, a dry hole which logged the sands too low to produce. Approximately 1 mile northeast of production Luling 1-w-C Slick is drilling below surface casing cemented at 1,000 ft. The drilling of this well will throw considerable light on the future trend of development and will be watched with much interest.

Mills Bennett and Anderson-Prichard 1 Felipe Perez, located in the West Tuleta field, Bee County, has been completed for a gas-distillate producer and is shut in waiting to be gaged. With the hole bottomed at 7,791 ft., casing was perforated opposite the Carrizo-Wilcox sand at 7,590-7,600 ft. Shut-in pressure is 2,600 lb. The completion extends production about 1 mile southwest, being located in this direction from two producers that were completed in the same sand about 2 years ago.

In the Nordheim area, De Witt County, another

(Continued on Page 78)

LOUISIANA GULF COAST

Test on Flank of Avery Island Dome Makes Good Producer

By F. L. SINGLETON

NEW ORLEANS, La. — The old Avery Island salt dome, Iberia Parish, was officially added to the list of producing fields in the Louisiana Gulf Coast when Humble 2 Petit Anse Co., located on the southwest flank of the structure, gaged 288 bbl. of 31.5-gravity oil daily while flowing through a 5/32-in. choke. Tubing pressure was 1,500 lb. Drilled to a total depth of 9,242 ft., completion was made by perforating casing opposite oil sand at 8,995-9,002 ft. The well is credited with having logged several sands, many of which remain to be tested. Testing the previous week at 9,012-19 ft. recovered pipe-line oil, but the well was killed due to salt-water intrusion. Location is in 25-13s-5e, a short distance from a dry hole drilled earlier in the year by the same company.

On the east flank of the Pine Prairie dome, Evangeline Parish, Gulf 1 Schlicher-Thomas Co. was being prepared for a production test. Five and one-half-inch casing was cemented on bottom at 7,870 ft. with the production test to be made at 7,829-65 ft. The well cut a 130-ft. fault at 2,400 ft. and another 3,000-ft. fault at 7,300 ft., which is responsible for the well being bottomed above 8,200-8,300 ft., which is the normal depth from which wells have been completed. In the meantime, Texas Co. was rigging up for a second well on the southwest flank where several weeks ago new production was opened from the Sparta sand below 9,000 ft. The new test is 3-B LeDanois, in 35-3s-1w, about 662 ft. northeast of the discovery well.

In the same parish, but located as a wildcat operation on the Reddell prospect, Continental-Humble 2 Pardee Co., 24-4s-2w, is bottomed at 12,510 ft. and side-wall cores are being cut. No shows of oil or gas have been reported although little information on the progress of the well has been released.

Test in St. Charles Parish Continues to Log Oil Shows

In St. Charles Parish and located about 14 miles southwest of New Orleans in 13-15s-21e, Gulf Refining Co. continues to log encouraging showings in 1 Delta Securities Co. The well is coring ahead in sand below 4,505 ft. with additional showings of oil and gas logged at 4,038-43 ft. and at 5,352-62 ft. Other showings have been logged at intervals at 2,281-3,100 ft., which is in the Pliocene-Miocene section. None of the sands has been drill-stem tested and the well is expected to be drilled considerably deeper before a test is made.

Texas 7 St. Mary Parish Land Co., an outpost test located in the Horseshoe Bayou field, St. Mary Parish, may open production from a new sand. With the hole bottomed at 10,472 ft., casing is expected to be cemented for testing several showings logged by an electrical survey. The survey showed possible oil sand at 9,662-90 ft., broken sand with possible oil show at 10,159-10,180 ft., and oil sand at 10,180-10,220 ft., the bottom of the section being logged as the top of a salt-water sand. According to the electrical survey the well is approximately 600 ft. higher than the company's St. Mary Parish Land Co.

In the Hester area, St. James Parish, Cities Service 1 Karstein was being watched with much interest as it drilled below 8,460 ft., following the running of an electrical survey which logged sand with a possible oil show at 8,375-8,400 ft. Location is in 42-13s-16e.

In the East White Lake field, Vermilion Parish, Union Oil Co. of California was attempting to dual complete 4-A Vermilion Parish School Board

(Continued on Page 82)

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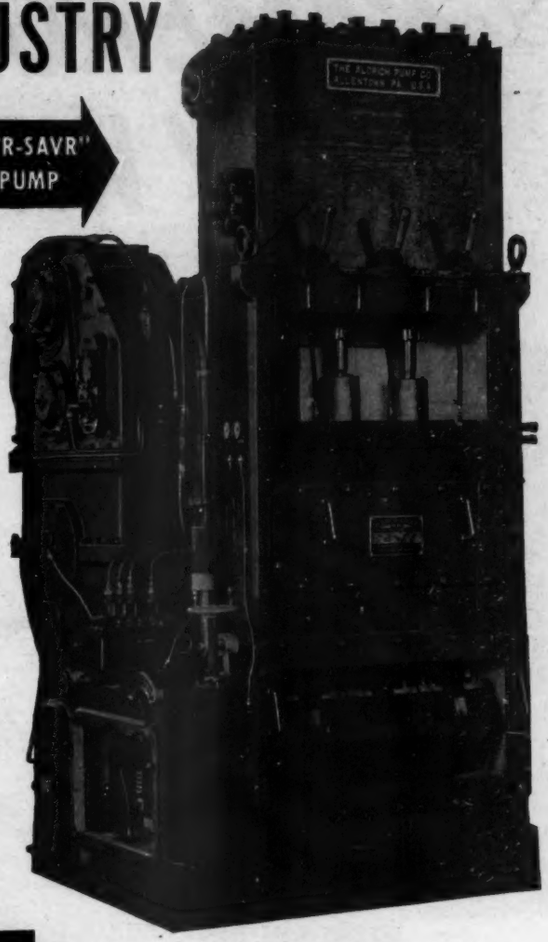

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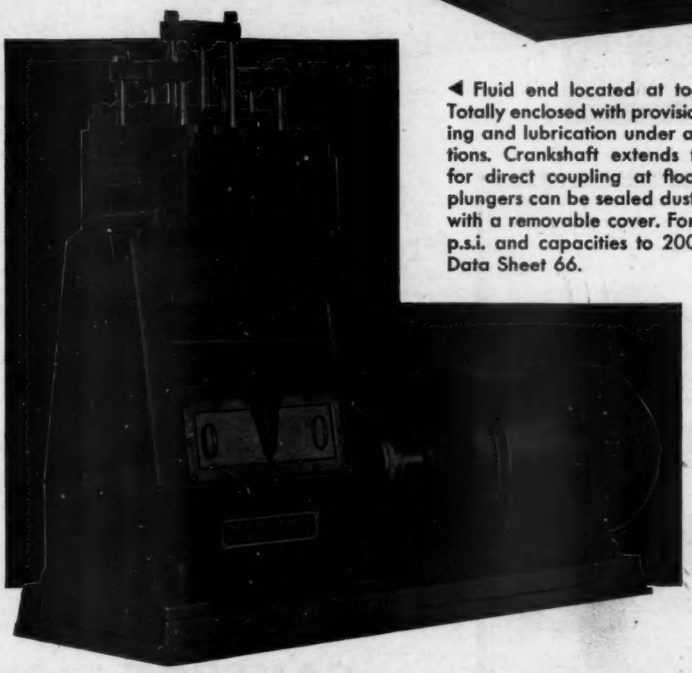

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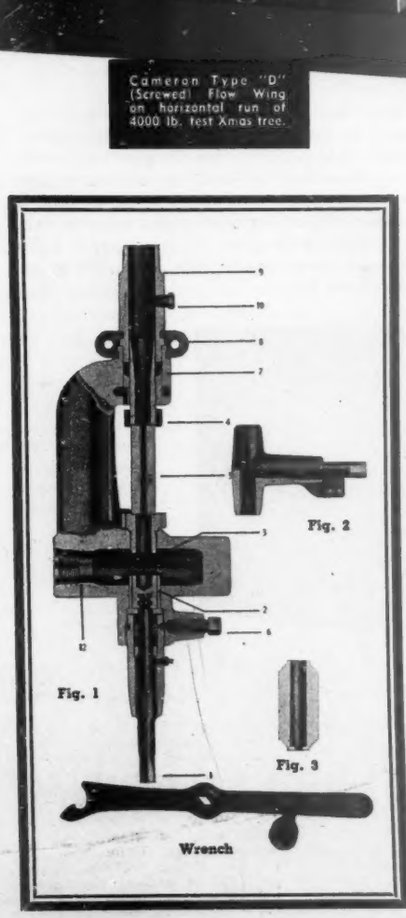

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HOW IT OPERATES: Referring to Figure 1 at left, to change flow bean fit hexagon socket in wrench to valve stem (1) and close valve (2) against seat (3). Spanner part of wrench is then applied to clamp screw (4), and only two turns required to release flow bean (5). New bean is clamped in place by clamp screw and valve is then opened and well is back on production. Both valve stem and valve seat are faced with hard metal to resist cutting. Valve stem and bonnet are packed with plastic packing which may be replenished under pressure. Clamp screw is packed with an asbestos ring (7) which is tightened automatically as flow bean is clamped in place. Two-bolt union (8) obviates need for additional union in flow line. Note that downstream end of clamp screw is belled to reduce turbulence and cutting. Three types of flow beans are interchangeable: (1) "Proration" bean illustrated in flow wing; (2) adjustable flow bean, Figure 2; and (3) "production' type bean which consists of a body and renewable stellite orifice disc. All flow beans clamp in position as shown in Figure 1.

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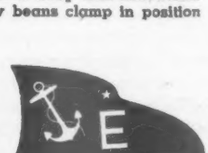

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Water Shut-Off Fails At Potential Gas Discovery

By L. P. STOCKMAN

LOS ANGELES, Calif.—There were no developments of importance from a drilling standpoint in California during the past week as Standard Oil Co. failed to get an effective water shutoff in 2-1 Suisun Community, a potential gas discovery in Solano County along the eastern shore of Suisun Bay in the San Francisco Bay region. Standard's 2-1 Suisun is bottomed in a gas sand at 7,300 ft. and has 5½-in. casing cemented at 6,779 ft. This wildcat appears destined to discover a new commercial gas accumulation in an area comparatively close to the East Bay consuming center comprising Oakland. Berkeley and other adjacent cities. Very little additional pipe line will be required to tie in this potential discovery with existing main gas-transmission lines. Several additional gas wells will be drilled in the central part of the state during the next several months to provide additional supplies of natural gas to replace the amount that has been coming northward from the San Joaquin Valley which will no longer be available because of the conversion of the Stanpac gas line to an oil carrier. At Rio Vista this week Standard Oil Co. completed 1 Terchuron as a good gas well but Amereda Petroleum Corp. failed in its attempt to extend the proved limits of production and has abandoned 1 Upham, which showed salt water along with a very small amount of gas. In addition to its drilling operations in the Rio Vista gas field and at Suisun, Standard is also drilling a new well in the McDonald Island gas field. Texas Co. has this week filed notice of intention to drill another well in the Tompkins Hill gas field of Humboldt County in the Eureka district. Texas has drilled three gas wells in the Tompkins Hill gas field but one of the three is not now commercially productive.

Paloma Outpost Nearing Pay Zone

In the Paloma distillate field, General Petroleum Corp. is nearing the point where the Paloma distillate zone should be found in 61-33 Gallagher and therefore this outpost should begin showing something within the next week. A successful completion at this point would tend to prove up surrounding acreage and may lead to additional drilling by Union Oil Co., Superior Oil Co. and other lease holders. No test has yet been drilled along the northern boundary of the Paloma distillate field and thus the outcome of drilling on the Gallagher outpost will be watched with interest. A week or so ago, General Petroleum Corp. made location for 87-28 Benco in 28-31s-26e, north of the Gallagher well, but the Benco outpost will not be drilled until after 61-33 Gallagher is completed.

SAN JOAQUIN VALLEY COMPLETIONS

North Belridge, Kern County: General Petroleum Corp. 24-3 Marina, 3,29s-21e, pumped 69 bbl., 15.3-gravity, 5 per cent cut, T.D. 1,055 ft., gun perf. 105 holes 650-85 ft., 84 holes 734-65 ft., 63 holes 915-35 ft., 48 holes 1,014-30 ft., completed in upper zone of Pliocene age.

Devils Den wildcat district, Kern County: Devils Den Oil Co. 4 Jacquelyn, 26-25s-18e, abandoned in gray sand, T.D. 501 ft., no important showings of oil or gas logged.

Midway-Sunset, Kern County: Chanslor-Canfield Midway Oil Co. 39-22 fee, 22-31s-22e, pumped 10 bbl., 11.8-gravity, 25 per cent cut, T.D. 1,427 ft., P.B. 1,166 ft., 140 mesh perf. 928-1,165 ft., completed in upper zone of Pliocene age.

Texas Co. 69 fee, 36-31s-22e, pumped 48 bbl., 17.4-gravity, 2 per cent cut, T.D. 1,146 ft., 80 mesh perf. 1,021-1,144 ft., recompleted in second zone of Pliocene age after hole deepened from 1,033 ft.

Rio Vista, Sacramento County: Amerada Petroleum Corp. 1 Upham, 10-3n-3e, dry at 4,647 ft., green sand 4,310 ft., form. test 4,320-50 ft., 570 ft. water cushion, 32/64-in. bean, open 1 hr., recovered 2,917 ft. salt water.

Standard Oil Co. 1 Terchuron, 27-4n-3e, flowed 11,452,000 cu. ft. gas, 40/64-in. bean, pressures 1,450/1,375 lb., shut-in pressures 1,550/1,550 lb., T.D. 3,960 ft., 60 mesh perf. 3,876-3,903 ft., green sand 3,883 ft., completed in Emigh gas zone of Cretaceous age.

Rincon Deep Test Nearing Record Depth for Field

Chanslor-Canfield Midway's deep test in the Rincon field of Ventura County has passed 10,000 ft. and will very soon be opening up virgin territory for testing. This well, 10-C Hobson in 17-3n-24w, is not yet the deepest well drilled in this field but will soon pass the present record and from then on it will test a zone deeper than any other found to date. This well appears to be running according to expectations and the outcome of drilling will have a pronounced effect on future drilling in this field if it should result in commercial production. Previous deep tests in the Rincon field have found considerable oil sand below present productive zones but in the two previous deep tests the oil sand was too tight to produce commercially. Chanslor-Canfield officials hope to make the present well a conclusive deep test in the hope that a deeper zone might have more porosity and permeability.

Standard Oil Co. is still looking for the pay in 1 Rice Ranch in the Orcutt district of Santa Barbara County, and at 8,700 ft. the outlook is not any too promising. The present formation is a shale with a little brown sand. This well is one of several that Standard expects to drill in the coastal district during the next several months. In the Cat Canyon field, Standard has spudded 1 South Basin-Lloyd Community in 15-9n-33w and will probably also start 5 Los Flores soon at the west end of the West Cat Canyon field. In the Gato Ridge field, Tide Water Associated Oil Co. is in a hard shale at 4,881 ft. in 1 Davis in 33-8n-31w, and a formation test at 4,730-4,856 ft. recovered 700 ft. of mud with a few streaks of tar in 55 minutes.

Drilling Decline Continues in Santa Maria Valley Field

Drilling operations in the Santa Maria Valley field of Santa Barbara County have declined to the point where there are only two wells under way at the present time. This field failed to attain its allowable production during the month of July but this was probably due to transportation problems rather than the inability of the field to equal its allotment. Productive limits of the Santa Maria Valley field appear to be quite well defined as the abandonment of 1 Mathison by Union Oil Co. last week clearly defined the limits to the west. Previous dry holes in other directions have outlined the productive acreage quite definitely although there is still room for another 150 wells throughout the field provided the spacing program is changed to allow such additional drilling.

COASTAL DISTRICT COMPLETIONS

Red Mountain wildcat district, Ventura County: Shell Oil Co. 1 Wood, 18-3n-23w, abandoned in gray sand and shale, T.D. 5,754 ft., no showings of any importance logged, fault zone at 2,600 ft., 55° dips at 5,312 ft.

Santa Maria Valley, Santa Barbara County: Union Oil Co. 15 Union Sugar, 19-10n-34w, pumped 236 bbl., 14.7-gravity, 2 per cent cut, T.D. 5,240 ft., perf. 4,935-5,238 ft., completed in Monterey of Miocene age, bottomed in Franciscan basement 5,240 ft.

San Martinez, Los Angeles County: Ohio Oil Co. 3 Vasquez, 17-4n-17w, flowed 576 bbl., 36.3-gravity, 0.5 per cent cut, 2,275,000 cu. ft. gas, 20/64-in. bean, pressures 1,275/1,450 lb., T.D. 6,044 ft., perf. 5,941-6,042 ft., completed in third Modelo zone of Miocene age, on form. test, 5,660-5,778 ft. well flowed 5,000,000 cu. ft. gas with no oil.

Timber Canyon, Ventura County: A. T. Denison 1 Timber Canyon, 13-4n-21w, pumped 15 bbl., 37.9-gravity, 2 per cent cut, T.D. 1,630 ft., P.B. 1,450 ft., perf. 883-1,450 ft., completed in Timber Canyon zone of Miocene age.

Ventura Avenue, Ventura County: Tide Water Associated Oil Co. 50 Ventura Land & Water, 26-3n-23w, flowed on compressor 110 bbl., 27.7-gravity, 0.3 per cent cut, 176,000 cu. ft. net formation gas, 40/64-in. bean, pressures 50/400 lb., T.D. 6,792 ft., perf. 6,482-6,777 ft., completed in intermediate zone of Pliocene age.

Testing Underway at Second Buena Park Well

Texas Co. is making a production test on 4-1-E Buena Park in the Buena Park field of Orange County and the future status of this well should be determined within the next 2 weeks. A series of tests is being made on the way out of the hole from 10,044 ft. by perforating the 5½-in. casing at intervals. This was the procedure used in completing the well with the result that only the approximate depth from which production is coming is known.

The present well has shown salt water of low salinity in several of the tests already made and the best showing the well has made is a trace of oil and a little gas. This well appears to show edgewater conditions and it may be possible that the Buena Park structure is very small and this well located just outside the possibly productive area. The productive zone found in the discovery well was very thin and for this reason Texas is taking particular pains with the present well in order that no small amount of oil sand may be passed up.

Third Turnbull Canyon Test Near Completion

Continental Oil Co. is completing 3 Turnbull Community in the Turnbull Canyon field of Los Angeles County and the well should be tanking oil within several hours. This is the third well drilled in this field by Continental Oil Co. In order to get these three wells, however, the company has been obliged to drill five holes as two of the trio failed to result in commercial production in vertically drilled holes and had to be whipstocked toward the axis of the structure. Continental drilled 3 Turnbull Community to 5,608 ft. and then backed up and redrilled to 3,801 ft. When this field was first discovered it looked very good and showed possibilities of resulting in relatively large production even though the discovery well required a pump to produce. Shortly after, however, Continental's second well drilled through a south fault and in doing so reduced the potentially productivt acreage about 50 per cent.

LOS ANGELES BASIN COMPLETIONS

Brea Olinda, Orange County: Union Oil Co. 72 Stearns, 7-3s-9w, pumped 256 bbl., 14.9-gravity, 10 per cent cut, T.D. 3,763 ft., P.B. 3,375 ft., perf. 2,950-3,334 ft., completed in Brea Olinda oil sand of Pliocene age, extends the productive limits of the field southward.

Dominguez, Los Angeles County: Shell Oil Co. 129 Reyes, 33-3s-13w, flowed 465 bbl., 29.7-gravity, 3 per cent cut, 200,000 cu. ft. gas, 48/64-in. bean, pressures 10/600 lb., T.D. 7,945 ft., perf. 7,273-7,443 ft., 7,463-7,553 ft., 7,574-7,620 ft., 7,639-7,708 ft., 7,729-99 ft., 7,834-7,940 ft., completed in seventh and eighth Callender zones of Miocene age.

Wilmington, Los Angeles County: Union Pacific Railroad 218 fee, 4-5s-13w, flowed 169 bbl., 24.6-gravity, 5 per cent cut, 128/64-in. bean, flow pressure 70 lb., T.D. 3,472 ft., gravel packed perf. 2,539-2,620 ft., 2,639-66 ft., 2,690-2,743 ft., 2,955-3,092 ft., 3,118-3,238 ft., 3,266-3,315 ft., 3,330-3,465 ft., completed in Ranger zone.

Lindsborg Field Extended To North and East

By CARL HOOT

THE Lindsborg pool of McPherson County was again the center of attraction in Kansas last week. Two good Viola lime wells extended the field north over ½ mile. The larger of the two and the northernmost well carried production into Section 6. It was Mabee Oil & Gas 1 Carlson, W½ SW SE 6-17-3w, which pumped 561 bbl. of oil a day from pay at 3,370-78 ft. Auto Ordnance Corp. 1 Johnson, a ½-mile-east extension and discovery well of a second pay zone for the field was previously reported as flowing from Wilcox sand at 3,450 ft. According to latest reports from the Corporation Commission the well had Simpson sand at this depth.

Cities Service Oil Co. 1 English, Edwards County wildcat in NE cor. 8-25-16w, has made several flowing tests and has a fair showing for a pool opener. Formations logged were Lansing at 3,784 ft. which had a show of oil and good saturation; Mississippi lime at 4,237 ft.; Viola lime 4,350 ft. with a show of oil and saturation from 4,420-35 ft.; Simpson 4,542 ft. and Arbuckle at 4,617 ft. Total depth was 4,650 ft. Perforations at 4,422-36 ft. showed gas and after acid treatment the well flowed 12 bbl. of fluid in 2 hours which was mostly water. Additional acid increased the flow to 16 bbl. cutting only 5 per cent water.

In Russell County, between the Russell and Hall-Gurney pools, A. H. Witt 1 fee, a wildcat in SW SW NE 3-14-14w, flowed 97 bbl. of oil in 1½ hours and was still testing on last report. The pay zone at 3,000-09 ft., tentatively correlated with the Lansing-Kansas City topped at 2,976 ft. Seven-inch casing was set at 2,974 ft. and the well filled 2,500 ft. with oil in approximately 15 hours.

KANSAS COMPLETIONS

Wildcats

Graham County: Nadel & Gussman 1 Holmquiste, NW NW SW 11-6-21w, dry, T.D. 3,790 ft., Topeka 3,209 ft., Lansing 3,417 ft., base Kansas City 3,648 ft., Arbuckle 3,743 ft.

Jefferson County: McLaughlin 1 Bodde, NW NW SW 28-8-20, dry, T.D. 1,770 ft., sand 1,550 ft., Mississippi lime 1,583 ft.

Marion County: Superior Oil 1 Graham, SW SE SW 2-21-5, dry, T.D. 2,725 ft., Mississippi lime 2,240 ft., Hunton 2,480 ft., Viola 2,540 ft., Simpson dolomite 2,580 ft.

'Rice County: Westgate-Greenland 1 Larson, SE cor. 16-18-6w, dry, T.D. 3,560 ft., Lansing 2,865 ft., Mississippi lime 3,505 ft.

Russell County: C. Roberts et al 1 Smith, W½ SW NW 3-11-15w, abandoned location.

Washington County: Gulf 1 Baker, NW SE SE 1-1-2, dry, T.D. 3,153 ft.

Fields

'Augusta, Butler County: Mash & Plymate 1-A Brown, NE SE SE 16-27-4, pumped 25 bbl., Arbuckle 2,550-58 ft.

Bemis, Ellis County: Champlin Ref. 5 Gladheart, E½ NW NE 29-11-17w, pumped 120 bbl., Arbuckle 3,593-3,607 ft., T.D. 3,624 ft.

Chase, Rice County: Auto Ordinance 2 Hall, N½ SE SW 34-19-92, dry, T.D. 3,276 ft.

Cities Service 1-B Dick, NW SW 9-20-9w, pumped 544 bbl., Arbuckle 3,229-43 ft.

Eudora, Douglas County: J. M. Edwards 1 Rosenaw, SW NW 17-13-21, dry, T.D. 776 ft.

Fairport North, Russell County: C. E. Liggett 1 Cook, SW NW 9-11-15w, pumped 75 bbl., Sooy sand 3,422-37 ft.

Feltes, Barton County: R. E. Day 1 Thiessen-Hoffman, N½ NE NW 14-16-12w, dry, T.D. 3,385 ft.

Henne, McPherson County: H. & M. Oil 1 Toile, S½ NW NW 21-17-1w, 1,075 bbl., Mississippi lime 2,641-56 ft.

Iuka, Pratt County: Atlantic Ref. 1 Tritsch, NW SE 11-27-13w, pumped 831 bbl., Simpson sand 4,303-14 ft.

McLouth, Jefferson County: Joe Bradley 1 Edmonds, SW SW 16-9-20, 4,300,000 cu. ft. gas, sand 1,353-66 ft.

McLouth, Leavenworth County: Magnolia 1 Kesinger, SE NW 1-10-20, dry, T.D. 1,470 ft.

Kraft-Prusa, Barton County: Black-Marshall 1 Heffman, NE SE SW 19-16-11w, pumped 278 bbl., Gorham sand 3,356-66 ft.

Skelly 4 Grosshardt, NE SE NE 15-17-11w, 2,392 bbl., Arbuckle 3,303-33 ft.

Stanolind 5 Soeken, NE SE NW 22-17-11w, 3,000 bbl., Arbuckle 3,276-85 ft.

Lindsborg, McPherson County: Mabee Oil & Gas 1 Carlson, W½ SW SE 6-17-3w, pumped 561 bbl., Viola 3,370-78 ft.

Bay Pet. 1 Johnson, W½ NE NE 7-17-3w, pumped 190 bbl., Viola 3,347-58 ft.

Patterson, Kearny County: Stanolind 1 Beissel, E½ NW NW 25-22-38w, pumped 266 bbl., sand 4,740-52 ft.

'Peace Creek, Reno County: Mid-Continent 2 Smisor, SW cor. 30-22-9w, pumped 239 bbl., Viola 3,681-99 ft.

Sinclair Prairie 1 Baughman, SW NW NE 1-23-10w, pumped 120 bbl., Viola 3,708-32 ft.

Transwestern Oil 2 Withroder, SW SE NW 1-23-10w, flowed 119 bbl. in 1 hr., Viola 3,700-12 ft.

A. M. Landon 1 Hollenback, SW NE SW 28-23-10w, abandoned location.

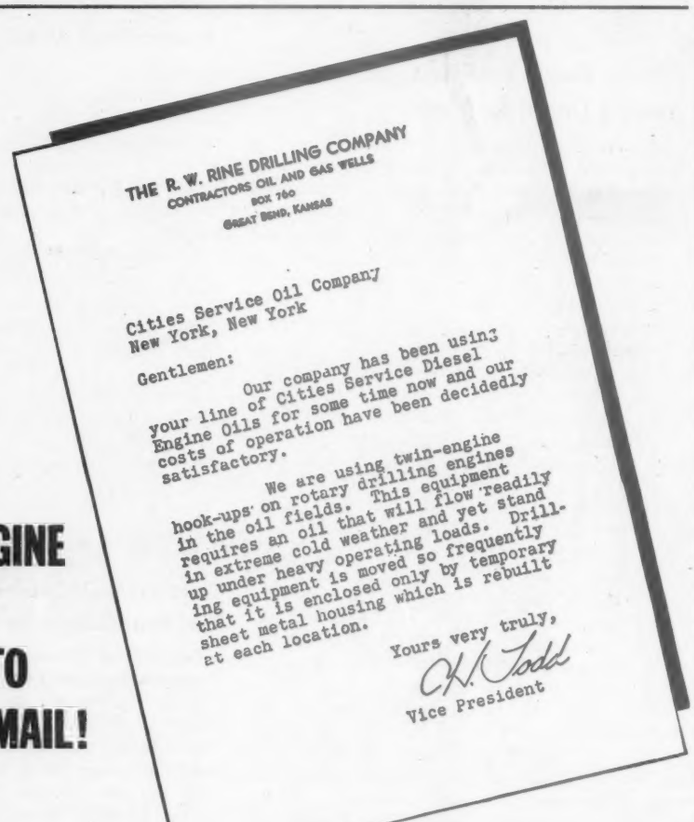
'Potwin, Butler County: Bennett & Abel 2 Maxwell, SE NE NW 31-24-4, pumped 50 bbl., Mississippi lime 2,659-75 ft.

Raymond, Rice County: Anderson-Prichard 2 Yeo, N½ NW NW 29-20-10w, dry, T.D. 3,304 ft.

Smyres, Rice County: Transwestern Oil 2 Braden, NE SE NW 1-20-6w, pumped 73 bbl., Mississippi lime 3,348-72 ft.

Stickney, Barton County: Skelly 3 Susank, SE SW NE 19-16-13w, pumped 320 bbl., Arbuckle 3,400-02 ft., T.D. 3,425 ft.

(Continued on Page 83)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Clayton Pool Extended Half Mile Northward

ZANESVILLE, Ohio.—A 55-bbl. producer extended the Clayton pool northward into Madison Township, Perry County. Preston Oil 1 Leonard Sampson, Section 18, ½ mile north of existing production, was completed with an initial production of 55 bbl. in the Clinton sand at 3,210-50 ft. Total depth of the well was 3,275 ft.

A gasser gaging better than 2,000,000 cu. ft. in the Clinton extended the Brush Creek pool slightly to the southwest in Morgan County.

OHIO COMPLETIONS

Ashland County, Vermillion Township: Ohio Fuel 1 T. L. Bartley, Sec. 19, 680,000 cu. ft. gas, Clinton, T.D. 2,682 ft.

Athens, Lodi Township: Ohio Fuel 3 J. M. Campbell, Sec. 23, dry, second Berea, T.D. 1,554 ft. (old well drilled deeper).

Rome Township: Gibson et al 2 W. Copeland, Sec. 29, 200,000 cu. ft. gas, Macksburg 800-ft. sand, T.D. 774 ft.

Holmes County, Washington Township: J. C. Moore 1 A. H. Campbell, Sec. 1, dry, Berea, T.D. 784 ft.

Knox County, Jackson Township: Preston Oil 1 Ross Deal, Sec. 8, 77 bbl., 120,000 cu. ft. gas, Clinton 2,955-77 ft. and 2,994-3,004 ft., T.D. 3,020 ft.

Union Township: Ohio Fuel 1 H. G. Hammond, Sec. 24, dry, Clinton, T.D. 2,953 ft.

Licking County, Newton Township: Allen Willey 5 Sam Hickenbothan, Lot 3, 150,000 cu. ft. gas, shot, Big Cinnamon shale 1,322-1,432 ft.

Lorain County, Columbia Township: Ohio Fuel 1 J. G. Harrington, Lot 85, 1,910,000 cu. ft. gas, Clinton, T.D. 2,625 ft.

Ridgeville Township: Edson & Son 1 E. Cockrell, Lot 44, dry, Clinton, T.D. 2,406 ft.

Medina County, Hinckley Township: Ohio Fuel 1 Joe Perkovic, Lot 49, 500,000 cu. ft. gas, shot, Clinton, T.D. 3,571 ft.

Granger Township: Ohio Fuel 1 F. H. Slocum, Lot 58, 750,000 cu. ft. gas, shot, Clinton, T.D. 3,538 ft.

Meigs County, Salem Township: Ohio Fuel 2 J. T. Ledlie, Sec. 1, 210,000 cu. ft. gas, Salt sand, T.D. 763 ft.

Rutland Township: Downie et al 2 Lois Entsminger, Sec. 23, 100,000 cu. ft. gas, stray, T.D. 645 ft.

Morgan County, York Township: Industrial Gas 1 Matilda Eppley, Sec. 21, 2,300,000 cu. ft. gas, T.D. 4,172 ft.

Marion Township: Emmett Able, tr., 13 Thomas Hoopes, Sec. 5, 3 bbl., Cow Run sand, T.D. 410 ft.

Windsor Township: J. L. Bachelor et al 3 E. E. Ross, Lot 2, dry, Cow Run, T.D. 610 ft.

Muskingum County, Wayne Township: Ohio Fuel 1 M. E. Powelson, Sec. 6, 130,000 cu. ft. gas, shot, Clinton 4,012-40 ft., T.D. 4,114 ft.

Washington Township: Wittmer Co. 1 C. A. Geyer, Lot 1, dry, Clinton 4,041-75 ft., T.D. 4,159 ft.

Perry County, Clayton Township: Preston Oil Co. 1 Charles Hammer, NE Sec. 4, dry, Clinton sand, T.D. 3,280 ft.

Harrison Township: Clyde M. Foraker and Ohio Fuel 1 L. P. Milligan, Sec. 22, 640,000 cu. ft. gas, Clinton 3,570-3,612 ft., T.D. 3,614 ft.

Madison Township: Preston Oil Co. 1 Leonard Samson, SW Sec. 33, 55 bbl. and 25,000 cu. ft. gas, Clinton sand, T.D. 3,265 ft.

Monroe Township: Ohio Fuel 212 Sunday Creek Coal Co., show gas, Berea, plugged, T.D. 1,065 ft.

Reading Township: Industrial Gas 1 J. Fleer, Sec. 22, 650,000 cu. ft. gas, Clinton, T.D. 2,970 ft.

Industrial Gas Corp. 1 Frank Fleer, NW Sec. 22, 560,000 cu. ft. gas with showing of oil at bottom of sand which they are trying to plug off, Clinton sand, T.D. 2,938 ft.

Pure Oil Co. 1 E. O. Brown, SE Sec. 1, 1,000,000 cu. ft. gas, Clinton sand, T.D. 3,330 ft.

Thorn Township: Preston Oil Co. 1 Elmer Sivits, SE Sec. 22, dry, Clinton sand, T.D. 2,792 ft.

Davis et al 2 E. Orr, Sec. 13, 40 bbl., shot, Clinton 2,696-2,724 ft., T.D. 2,736 ft.

Tuscarawas County, Sandy Township: Natural Gas of W. Va. 1 S. Sweaney, Sec. 4, 125,000 cu. ft. gas, shot, Clinton, T.D. 4,828 ft.

Washington County, Barlow Township: Campbell et al 1 J. A. Pettit, Sec. 4, 136,000 cu. ft. gas, Squaw, T.D. 1,514 ft.

Wesley Township: Orndoff & Burt 1 A. M. Funk, Sec. 33, dry, Maxon (water), T.D. 1,170 ft.

Wayne County, Chester Township: Ohio Fuel 1 Dennis Hiner, Sec. 29, 140,000 cu. ft. gas, shot, Clinton, T.D. 3,192 ft.

Plain Township: Kemrow Co. 2 William Sidle, Sec. 28, 630,000 cu. ft. gas, Clinton, T.D. 3,153 ft.

INDIANA

EVANSVILLE, Ind.—At latest reports Gulf Refining Co. was installing pumping equipment at 1 Oscar Reiss, W½ SW NW 23-7S-14W, 3 miles southwest of Mount Vernon. The 1 Reiss is showing some water but a production test is to be

(Continued on Page 82)

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Second Oil Pool Is Opened In Lubbock County

By ROBERT INGRAM

MIDLAND, Tex.—Lubbock County had its second one-well oil pool last week. The new pool was opened 7 miles southeast of the Lubbock pool, opened a year ago, and is northeast of the city of Lubbock. Discovery well was Stanolind Oil & Gas Co. 1 Stinnett, Labor 18, League 4, San Augustine C.S.L. Survey, which had drilled to 7,000 ft. then plugged back to 5,372 ft. where testing has been under way for months. At times during the testing it was thought the test would be abandoned, but a week ago it was indicated it would make a well.

Potential test was finally taken and the well completed for 66 bbl. of oil and 35 bbl. of water pumping after treatment with 14,500 gal. of acid. Oil tested 26.5 gravity. The well had topped pay at 4,685 ft.

Meantime, another Lubbock County test, J. R. Sharp 1 Ira Elliott, Section 33, Block D-5, E.L.&R. Survey, a farmout from Stanolind, was getting into the know. It topped the brown lime at 3,220 ft. and the top of the solid lime was called at 3,500 ft. It was drilling below 3,752 ft.

Show at Howard Test

Slight show of oil at 2,135-50 ft. and a better show at 2,780-90 ft. were reported during the week at Cosden Petroleum Corp. 1 R. C. Scott, Section 59, Block 1, W.&N.W. Survey, 1½ miles northeast of production at Howard-Glasscock (Chalk-Roberts) in Howard County. The test is also 3 miles south of the Snyder pool and may prove a link between the two old areas.

Third Ordovician Well at Embar

The third well in the Embar Ordovician pool of southwestern Andrews County was brought in last week at Phillips Petroleum Co. 3 University-Andrews, Section 31, Block 10, University Survey, a southwest offset to the discovery. On early tests it gave indication of proving the best of the three wells as it flowed at the estimated rate of 100 to 125 bbl. of oil an hour at the end of a drill-stem test.

This rate of flow, which would total between 2,400 bbl. and 3,000 bbl. a day if maintained, compared with a natural flow of 1,421 bl. a day at the discovery, and a comparable unofficial production at the No. 4 University-Andrews, ½ mile northwest of the discovery, which came in the previous week.

The No. 3 was given a 54-minute drill-stem test at 7,850-7,901 ft. After 26 minutes it began flowing with gas estimated at 3,000,000 cu. ft. Operator ran an electrical log at the end of the test and at the week's end was preparing to run 5½-in. casing for official completion.

The new well is deeper than either of the other two producers, the discovery having been completed at 7,855 ft. and the No. 4 at 7,860 ft., and may indicate nearness of the edge both by the depth and the large initial. Edge wells in West Texas Ordovician pools often come in with larger initial potentials than those higher up on the structure.

Fullerton Outpost Makes Well

Magnolia Petroleum Co. 2 Ralph, Section 11, Block A-37, P.S.L. Survey, northwest outpost to the Fullerton deep Permian lime pool of northwestern Andrews County, flowed 37.40 bbl. of oil in 3 hours through ½-in. tubing choke after acid treatment on preliminary tests. The well was shut in again after the flow. Total depth was 7,280 ft.

The first show of oil was at 6,845 ft. and the entire pay section was treated with 14,000 gal. of acid, and the gage was believed to be a test of the entire Permian pay between 6,845 ft. and the total depth.

NORTHERN WEST TEXAS COMPLETIONS

Wildcats

Lubbock County: Stanolind 1 J. F. Stinnett, Lab. 18, Lge. 4, San Augustine C.S.L. Sur., 7 mi. SE of Lubbock discovery well, elev. 3,136 ft. pumped 66 bbl. oil and 35 bbl. water after acid, anhydrite 1,470 ft., San Andres 2,980 ft., San Angelo 4,245 ft., pay 4,685 ft., T.D. 7,000 ft., P.B. 5,372 ft., *discovery.*

Fields

Seminole, Gaines County: Mabee Oil & Gas 1 T. S. Riely estate, SW Sec. 189, Blk. G, W.T.R.R. Sur., in Seminole townsite, elev. 3,342 ft., flowed 238 bbl. through ½-in. tubing choke natural, pay 5,155 ft., T.D. 5,255 ft.

Slaughter, Cochran County: Continental 5-58 Dean, Lge. 58, Martin C.S.L. Sur., elev. 3,698 ft., flowed 723 bbl. through tubing after acid, pay 4,957 ft., T.D. 5,001 ft.

Honolulu 9-58 Dean, Lge. 58, Martin C.S.L. Sur., elev. 3,701 ft., flowed 937 bbl. through 2½-in. casing after acid, pay 4,925 ft., T.D. 5,010 ft.

Honolulu 10-58 Dean, Lge. 58, Martin C.S.L. Sur., elev. 3,693 ft., flowed 920 bbl. through 2½-in. casing outlet after acid, pay 4,935 ft., T.D. 5,015 ft.

Honolulu 11-58 Dean, Lge. 58, Martin C.S.L. Sur., elev. 3,693 ft., flowed 779 bbl. through casing after acid, pay 4,940 ft., T.D. 5,020 ft.

Slaughter, Hockley County: Honolulu 20 Frazier, SE NW Sec. 10, Blk. X, P.S.L. Sur., elev. 3,515 ft., flowed 1,402 bbl. through casing after acid, pay 4,890 ft., T.D. 4,990 ft.

Honolulu 22 Frazier, NE SW Sec. 10, Blk. X, P.S.L. Sur., elev. 3,522 ft., flowed 1,498 bbl. through 2½-in. casing outlet after acid, pay 4,920 ft., T.D. 5,010 ft.

Honolulu 39-B Slaughter, NW NW Lab. 49, Lge. 37, Zavalla C.S.L. Sur., elev. 3,520 ft., flowed 931 bbl. through 2½-in. casing outlet after acid, pay 4,920 ft., T.D. 5,005 ft.

Slaughter, Terry County: De Kalb 3 Alexander, Sec. 7, Blk. X, P.S.L. Sur., elev. 3,545 ft., pumped 204 bbl. oil plus 3 per cent water after acid, pay 5,027 ft., T.D. 5,054 ft.

De Kalb 2 Jacobson, NW SE Sec. 6, Blk. D-11, J. H. Gibson Sur., elev. 3,545 ft., pumped 137 bbl. oil plus 3 per cent water after acid, pay 5,023 ft., T.D. 5,060 ft., *southwest edge well.*

Wasson, Yoakum County: T. P. Coal & Oil 35 Bennett, SE NW Sec. 631, Blk. D, J. H. Gibson Sur., elev. 3,580 ft., flowed 408 bbl. through tubing after acid, pay 5,180 ft., T.D. 5,256 ft.

Information on Monahans Discovery Well Released

Shell Oil Co. last week released some information on its Ward County discovery, 1 Sealy-Smith Foundation, Section 38, Block A, G.&M.M.B.&A. Survey, 2½ miles northeast of Monahans. The well had opened the Monahans pool at a record depth of 10,111 ft., flowing 120 bbl. of oil, natural, and was reported as a completion at that depth. It was deepened, however, and was reported to have made a record flow later on.

The company kept silent on these rumors until last week when it revealed that the well had been carried to 10,545 ft., then was plugged back to 10,485 ft. and again to 10,438 ft. At this depth a 1-hour gage was taken through 2-in. tubing set at 10,042 ft. The well flowed 195 bbl. of fluid, 30 per cent sulfur water, and had 1,350 lb. casing pressure and 550 lb. on tubing. Oil tested approximately 47 gravity.

Before completing, however, the company made another try for a water shutoff, and plugged back to 10,360 ft. where another gage is to be taken.

The company's report did not silence rumors of a 764-bbl.-an-hour flow at one time during the testing, and it was still believed that more than 460 ft. of pay had been logged. It was also reported that the well had passed up promising production from a stratum of 220 ft. of Clear Fork lime topped near the 5,600-ft. level, as well as favorable zones between the Permian and Ellenburger limes, probably the Silurian.

That other pay zones had been found was supported by Shell's location of No. 2, Section 38, Block A, which is projected to 6,000 ft. where it will test the Clear Fork (Tubb) lime.

Crane Wildcat to Deepen

Deep exploration for northeastern Crane County was assured by announcement that the Texas

(Continued on Page 77)

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TEXAS GULF COAST

Increase in Texas Gulf Coast Developments Continues

By F. L. SINGLETON

HOUSTON, Tex. — Wildcat exploration along the Texas Gulf Coast district continues to be expanded with the addition of several more locations reported during the week. Along the Wilcox trend two new operations were scheduled to get under way. These locations are Fain Drilling Co. et al 1 Baldwin estate located about 4 miles west of the Mercy field in San Jacinto County, and George W. Strake 1 T. J. Peel, in the Owen Shannon Survey, 4 miles northeast of Montgomery. These are important additions to the development now taking place along the trend where eight tests were drilling or scheduled to be drilled at an early date. This activity is located in Tyler, Montgomery, Austin and Lavaca counties.

Another important extension to the Mercy field, San Jacinto County, was recorded with the completion of Shell 1 Golston, which is flowing at the rate of 22 bbl. of 37-gravity oil per hour through a ¼-in. choke while testing through perforated casing opposite the Wilcox sand at 8,250-75 ft. This well was drilled to a total depth of 8,925 ft., and while no information has been released as to what was found below the discovery pay, no shows were indicated as the production string, consisting of 5½-in. casing, was cemented at 8,293 ft.

In the North Bay City area, Matagorda County, Ohio 1 McDonald, J. Betts Survey, was being prepared for retesting after the well flowed at the rate of 187 bbl. of 34.8-gravity oil per day plus 4 per cent salt water. The test was made by perforating casing at 7,876-79 ft. and the gage was made through a 7/64-in. choke. The 7,800-ft. sand is the highest of several sands logged, all of which have been tested and showed for production along with some salt water. The present sand is believed to be the best sand and the well is to be retested at approximately the same depth after squeezing off with cement in attempt to eliminate the water.

Jackson County Activity

With approximately 30 rigs running in Jackson County, development in this area was attracting most attention. Of the total rigs running, eight are wildcats scattered throughout the county while the major share of field development centers southeast and southwest of the town of Ganado around the four new fields that have been opened during the past few months. Of particular interest is the development in the new Stewart field where four tests located northeast, southwest and west of the discovery well were nearing their objective which is the 4,900-5,000-ft. zone in the Marginulina-Frio pay. The four wells are being drilled by Stewart Boyle who opened the field 2 weeks ago with the completion of 1 Rose & Sample which is generally recognized as one of the best producers to be completed in the county. The progress of these wells is being watched with much interest as production in any of the wells would result in several offsets to be drilled by other companies.

Approximately 6 miles east of the above field there was little to report in the Harmon, Mayo and West Mauritz fields as none of the wells drilling had reached the testing stage. The most interesting well at the close of the week was Stanolind 1 H. A. Meyer, about 1,000 ft. south of Mayo & Boyle 1 Stroubal and about 2,400 ft. northeast of Gulfboard 1 Burditt. The sand was apparently found low as drill-stem testing was being attempted at 5,335-50 ft., which is lower than the sand found in the two nearest producers.

This area gained two important locations during the week as Louis Crouch prepared to drill two wells on the Ada A. Lunday tract, the first test being located about 3,000 ft. east of Mayo-Boyle Stroubal producer on the extreme east side of the field in the A. Kountze Survey.

TEXAS GULF COAST COMPLETIONS

Wildcats

Grimes County: Production Service Co. 1 Boney, dry, T.D. 5,315 ft.

Matagorda County: Wheelock & Collins 1 McNabb, dry, T.D. 6,800 ft.

Trinity County: Pan American 1 Texas Long Leaf Lbr. Co., dry, T.D. 6,510 ft.

W. A. Wise 1 Texas Long Leaf Lbr. Co., dry, T.D. 5,509 ft.

Fields

Danbury, Brazoria County: Rowan Drilling Co. 18 Jamison, 153 bbl., ¼-in. choke, perf. casing 5,660-79 ft., T.D. 6,199 ft.

Dickinson, Galveston County: Pan American 1 Kohfeldt, 17,000,000 cu. ft. gas open flow, perf. casing 8,496-8,532 ft., T.D. 8,588 ft.

(Continued on Page 82)

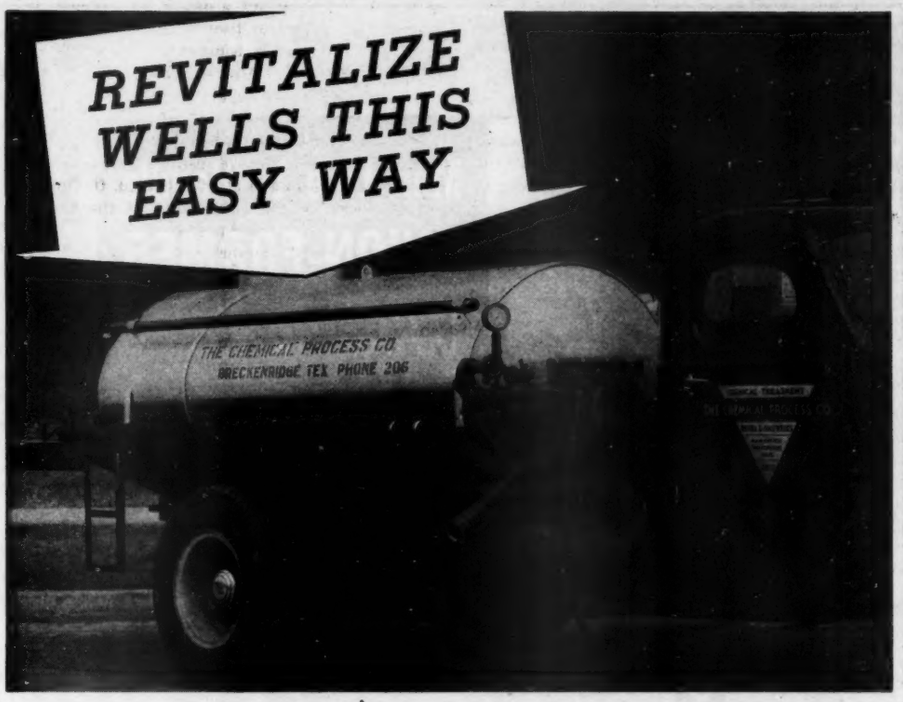
Permian Basin, Panhandle

(Continued from Page 76)

Co. 1 George C. Fraser et al, Section 19, Block 42, Township 4s, T.&P. Survey, which has been shut down for a week at 4,799 ft., will deepen to 5,800 ft. When shut down, the well had 1,900 ft. of water in the hole which came in at 4,758-62 ft.

Reagan County's Barnhart pool was extended ½ mile southwest by Amerada Petroleum Corp. 1-RF University, Section 4, Block 48, University Survey, which flowed 526 bbl. of oil in 24 hours through ½-in. tubing choke. Casing pressure was 0, tubing pressure 230 lb. Oil tested 43 gravity. The well, completed without shooting or acid treatment, was bottomed at 9,254 ft. in dolomite and was producing through perforations in 5½-in. casing at 9,144-74 ft. in the Ellenburger.

Magnolia 1 Alan Robertson, Section 16, Block 142, T.&S.T.L. Survey, Ordovician wildcat 10



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miles west of the Heiner deep producer and 13 miles north of Fort Stockton in western Pecos County, made water on drill-stem tests at 3,512-95 ft. and 3,600-33 ft. It was being deepened.

SOUTHERN WEST TEXAS COMPLETIONS

Fields

Abell, Pecos County: Tal Vez 2 Burnett, 1,650 ft. from NW line and 990 ft. from SW line Sec. 5, Blk. 3, H.&T.C. Sur., elev. 2,390 ft., flowed 5,298 bbl. through ½-in. tubing choke, Simpson 4,780 ft., Tulip Creek 4,945 ft., McKee 5,259 ft., Waddell 5,775 ft., pay 5,298 ft., T.D. 5,779 ft.

Beddo, Runnels County: Art Tucker 4-A King, Subd. 51, D. Diaz Sur. 532, pumped 60 bbl. oil and 97 bbl. water natural, pay 2,303 ft., T.D. 2,319 ft.; (well was temporarily abandoned week ending May 2, 1942).

Fromme, Pecos County: Cordova-Union 1 fee-state, elev. 2,472 ft., dry, T.D. 1,702 ft.

McCamey, Upton County: E. G. Rodman 1 R. P. Ricker, 1,321 ft. from NE line and 1,750 ft. from NW line Sec. 5, Blk. R, M. S. Denton Sur., elev. 2,566 ft., pumped 186 bbl. oil plus 25 per cent water natural, anhydrite 515 ft., salt 650 ft., pay 2,172 ft., T.D. 2,177 ft.

North Cowden, Ector County: Stanolind 4-D Midland Farms, SE SW Sec. 44, Blk. 42, Twp. 1n, G.&M. M.B.&A. Sur., elev. 3,069 ft., flowed 995 bbl. through tubing after shot, pay 4,565 ft., T.D. 4,836 ft., P.B. 4,812 ft., *northeast edge well.*

Spencer, Ward County: Stanolind 5-A Mollie E. Spencer, 1,991 ft. from SW lines and 1,995 ft. from SE line Sec. 53, Blk. 34, H.&T.C. Sur., elev. 2,625 ft., flowed 152 bbl. natural through ¼-in. tubing choke, pay 2,909 ft., T.D. 2,917 ft., *south edge well.*

World, Crockett County: M. & M. Production 4-B Powell, SE NW Sec. 62, E.L.R.R. Sur., elev. 2,795 ft., pumped 191 bbl. after acid, pay 2,637 ft., T.D. 2,646 ft.

TEXAS PANHANDLE COMPLETIONS

Carson County: Skelly 151 Schafer, Sec. 190, Blk. 3, potential 435 bbl. after shot, pay 3,197-3,250 ft., T.D. 3,250 ft.

Gray County: Magnolia 53 fee-227, Sec. 15, Blk. 3, potential 165 bbl. after shot, pay 2,852 ft., T.D. 2,997 ft.

Hutchinson County: Continental 6 Sanford-C, Sec. 79 Blk. 46, potential 96 bbl., pay 2,665 ft., T.D. 2,821 ft.

Gray County Production 3 Jasper, Sec. 23, Blk. M-23, potential 36 bbl. after shot, pay 3,040-3,121 ft., T.D. 3,163 ft.

J. M. Huber 4 Burch-Weatherly, Sec. 24, Blk. Y, potential 216 bbl. after acid, T.D. 3,100 ft.

Moore County: Texoma Natural 3-S P. Gober, Sec. 12, Blk. 1, gaged 24,200,000 cu. ft. gas, R.P. 342 lb., T.D. 3,050 ft.

Texoma Natural 28-P J. T. Sneed, gaged 9,500,000 cu. ft. gas, R.P. 301 lb., T.D. 2,867 ft., P.B. 2,727 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Wildcat, Lea County: M. E. Young 1 Cox, NE NW 20-18-32, dry, T.D. 1,300 ft., anhydrite 1,025 ft., salt 1,100-1,300 ft.

Arrowhead, Lea County: Repollo Oil 4 Brownlee, SE SW 25-21-36, flowed 60 bbl. in 12 hr., pay 3,725 ft., T.D. 3,800 ft., acid.

Maljamar, Lea County: Johnnie Cockburn 2-A Pearsall, SW SW 33-17-32, pumped 12 bbl., pay 3,576 ft., T.D. 4,872 ft., shot.

Johnnie Cockburn 3-B Miller, SW NW 25-17-32, flowed 80 bbl. in 4 hr., pay 4,077 ft., T.D. 4,190 ft., shot.

Martin Yates, Jr., 3 State, NW SE 32-17-32, swabbed 18 bbl., pay 3,517 ft., T.D. 4,700 ft., shot.

Rhodes, Lea County: Texas 1-AD State, NW NE 28-26-27 flowed 30 bbl. in 13 hr., pay 3,230 ft., T.D. 3,310 ft., shot.

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Southwest Texas

(Continued from Page 70)

gas-distillate sand was opened as Tide Water Associated Oil Co. continues to test 1 Gips, located in the W. A. Moore Survey. Casing was reperforated in the Wilcox sand at 7,118-24 ft., and on a 21-hour drill-stem test the well tested 1,985 lb. working pressure and flowed at the rate of 57 bbl. of 54-gravity distillate and 2 bbl. of fresh water per day. The gas volume was estimated at 2,850,000 cu. ft. daily. At the end of the week the perforations had been squeezed off and another test was scheduled to be made in the same sand section, although two other sands at 6,991-7,023 ft. and 7,022-34 ft. remain to be tested.

Another extension to the east side of the Seeligson field, Jim Wells County, was recorded with the completion of Humble 2 King, which is flowing at the daily rate of 154 bbl. through a ⅛-in. choke from sand at 6,016-25 ft. Total depth is 6,047 ft. with 5½-in. casing cemented at 6,029 ft. This well is located 1,848 ft. northeast of the company's 1 King, completed several weeks ago in the same sand to extend production about 3,800 ft. into Kleberg County. The original test also cored a thick section of sand at around 4,600 ft. to open a new and shallower sand for the field as drill-stem testing recovered pipe-line oil. The second well is said to have checked about normal with the first well.

About 8 miles north of the Bruni field, in the J. Poitevent Survey 665, Duval County, Republic Natural Gas Co. was scheduled to test 1 J. T. Dinn. With the hole bottomed at 3,006 ft., 5½-in. casing was cemented at 2,736 ft. after a drill-stem test at 2,487-92 ft. recovered oil-cut mud and some salt water. Field development in the Laredo district has been curtailed although wildcatting exploration is being carried on at a fairly steady pace.

SOUTHWEST TEXAS COMPLETIONS

LOWER GULF COAST DISTRICT

Fields

Midway, San Patricio County: Pan American 2 Morris, 77 bbl., 3/32-in. choke, top sand 6,045 ft., T.D. 6,320 ft.

Odem, San Patricio County: Seaboard 3 Burrows, 109 bbl., ⅛-in. choke, top sand 5,321 ft., T.D. 5,539 ft.

Seeligson, Jim Wells County: Sun 12 Canales, 148 bbl., ⅛-in. choke, top sand 6,045 ft., T.D. 6,072 ft.

Sun 8 J. W. Miller, 43 bbl., 5/64-in. choke, top sand 5,189 ft., T.D. 6,000 ft.

Stratton, Nueces County: Humble 15 King, 119 bbl., ⅛-in. choke, top sand 6,639 ft., T.D. 6,685 ft.

Southern Minerals 45 Stratton, 79 bbl., 7/64-in. choke, top sand 6,465 ft., T.D. 6,690 ft.

LAREDO DISTRICT

Wildcats

Jim Hogg County: Sun 2 Brooks, dry, T.D. 5,228 ft.

Starr County: Sun 1-C Frost National Bank, dry, T.D. 3,037 ft.

Fields

Arroy Grande, Starr County: Syndicate 1 Sanchez, dry, T.D. 1,530 ft.

Colorado, Jim Hogg County: Sun 1-E T. T. East, 65 bbl., 12 hr., ⅞-in. choke, top sand 3,160-67 ft.

Escobas, Starr County: Dullup Oil Co. 5 Zarro-Ranch, dry, T.D. 2,015 ft.

Oakville, Live Oak County: H. Coquat 2-C Reagan, 43 bbl. oil and 800 bbl. salt water open tubing, top sand 1,900 ft., T.D. 1,907 ft.

EASTERN TEXAS

Test in Black Oak Pool Finds Sub-Clarksville Saturation

By ROBERT INGRAM

DALLAS, Tex. — Another good show of oil in the sub-Clarksville formation at the Coke (Black Oak) Paluxy sand pool of northern Wood County was reported last week. This one was at Amerada Petroleum Corp. 1-A Darby, Berry Smith Survey, a north offset to the discovery well. A drill-stem test at 4,025-82 ft. in the sub-Clarksville recovered 485 ft. of heavy black oil and 90 ft. of mud in 4 hours. However, opinion was expressed that the formation was too shaly for commercial production despite the good showing, and the well was drilling deeper to the Paluxy.

Meantime, Magnolia Petroleum Co. 1 Grady White, D. L. Townsend Survey, ½ mile south of production, was preparing to run drill-stem test on the sub-Clarksville, topped at 4,150 ft. and drilled to a total depth of 4,163 ft. A considerable part of this large section was saturated with heavy black oil with 6 or 7 ft. of good section. Several other wells, including the discovery, had shows of varying degrees in this formation.

Magnolia's well was watched with considerable interest as it was figured some 90 ft. low to the Amerada 2 Kennemer, Paluxy producer 2,000 ft. north, and may possibly indicate a faulted condition in that direction.

Cherokee Wildcat Continues

Believed to be in the transit zone between Glen Rose and the Travis Peak, Humble Oil & Refining Co. 1 Curtis, Vaughn Survey, northwest of Larissa in Cherokee County, was coring ahead after a cut from 10,530-34 ft. returned hard, fine-grained sandstone. The well is expected to halt when the Travis Peak is established. It was reported to have had a show of distillate in the basal Glen Rose and also in the upper Pettit lime section.

It was also reported that Humble had leased almost solid some 3,000 acres around the old Texas Co. 1 Scritchfield, Davis Page Survey, 2 miles northwest of Bullard in southwest Smith County, which was abandoned at 8,100 ft. in the upper Glen Rose. There was talk that the Humble plans to take over this old wildcat, clean it out and deepen it on the strength of the shows at the 1 Curtis.

Smackover Test Dry

Latest effort to find production on the Smackover lime shoreline in East Texas ended in failure when Falcon Oil Co. 1 J. C. Keitt, S. Benton Survey, 10 miles west of Currie in Navarro County, found the formation salty.

EAST TEXAS COMPLETIONS

Wildcats

Cherokee County: Tex Harvey 1 L. Priest estate, J. Cook Sur. 160, 7 mi. NE of Rusk, dry, sand 4,353 ft., Georgetown lime 4,640 ft., T.D. 4,659 ft.

Robertson County: A. H. Carpenter et al 1 C. Kello, J. M. Bustilla Sur., 5½ mi. E of Hearn, dry, T.D. 3,505 ft.

Kirby & Morrison 1 W. Martin, W. R. Cox Sur., dry, Taylor 2,988 ft., T.D. 3,003 ft.

Fields

Chapel Hill, Smith County: Magnolia 1 Jackson, L. H. Dillard Sur., flowed 160 bbl. through flow valves, T.D. 8,349 ft.

Club Lake, Hunt County: D. H. Byrd et al 1 E. E. Wilson, J. Warren Sur., location abandoned.

Hawkins, Wood County: Humble 3 Republic Insurance, H. E. Watson Sur., flowed 81.13 bbl. in 6 hr. through ¼-in. choke, T.D. 4,655 ft.

Pleasant Grove, Rusk County: L. O. McMillian 1 R. Pool et al, George May Sur., dry, Austin chalk 3,911-4,071 ft., Woodbine sand 4,071 ft., T.D. 4,099 ft.

EAST TEXAS BORDER COMPLETIONS

Fields

Kildare, Cass County: Phillips 1 Benefield & Singleton, John Wanhop Sur., flowed 208 bbl. fluid, 10 per cent salt water through 11/32-in. choke, T.D. 6,100 ft.

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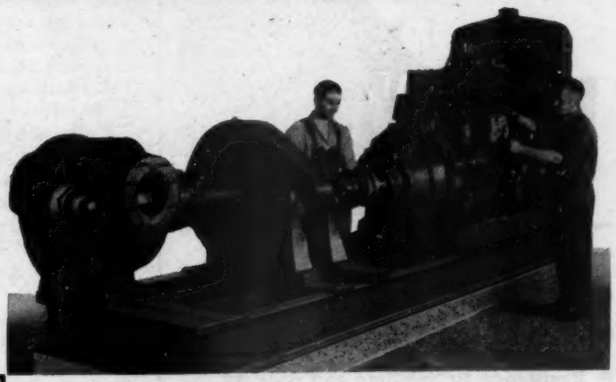

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ILLINOIS FIELD REPORT

Jefferson County Test Opens New McClosky Pool

MATTOON, Ill.—A new field in Jefferson County was indicated last week after Oil Carriers, Inc., and Lario Oil & Gas Co. 1 Alexander flowed 740 bbl. of oil in its first 24-hour test following an acid treatment. The well is located southeast of Bluford in SW NW 1-3s-4e, and is ½ mile north of the recently completed discovery well, 1 Jacobson-Starr. No. 1 Alexander is producing from McClosky saturation at 3,072-90 ft.

Oil Carriers, Inc., now plans to perforate pipe opposite the McClosky at the discovery well, which is producing from the Levias lime. Lario Oil & Gas Co. is rigging up for another well on the east side of the 120-acre Alexander lease. This test will be their 1 Alexander, N½ SW NE 1-3s-4e.

A diagonal offset to the 1 Jacobson-Starr, Kewanee Oil Co. 1 L. A. Dearinger, N½ NE SE 2-3s-4e, is coring for the McClosky after finding the Levias dry. This well is at 3,112 ft. and is reported to be running structurally low.

Meanwhile, another closely watched Jefferson County wildcat, Texas 1 Crouch, SW SW SE 16-3s-3e, was scheduled to drill plug to test a show of oil encountered in the Devonian. The hole is bottomed at 4,696 ft. and pipe was set after a drill-stem test of the Devonian yielded negative results.

Clay County Wildcat to Test Aux Vases and McClosky

Eason Oil Co. et al have set 7-in. casing to test two possible pay zones in its 1 Barbee, SW SW SE 35-5n-6e, about 4 miles north of Louisville and 4 miles southwest of the Bible Grove pool. Saturation was found in the Aux Vases sand at 2,699-2,741 ft. and in the McClosky lime at 2,790-99 ft. An attempt to make a drill-stem test on the Aux Vases was unsuccessful, but a test on the McClosky with packer set at 2,786 ft. showed 125 ft. of 37-gravity oil and 55 ft. of salt water in 1 hour. The well is bottomed at 2,799 ft.

Clinton County's Boulder pool was officially extended to the east last week by J. C. Auffenberg 1 Louis Stein, SW SW SW 36-3n-2w. After operators drilled plug, the hole filled with 150 ft. of oil in an hour. The well has been shut in, however, until storage tanks can be erected. Production is from the Benoist at 1,219-25 ft.

Salem Well Completed as Large Producer in Trenton

Completed as a strong producer from the Trenton lime in the Salem field of Marion County, Texas 18 M. I. Williams, NE SE 31-1n-2e, pumped 58 bbl. of oil in 3 hours. This is the first successful completion from the Trenton in this field for a considerable time and it ranks of great importance. The 18 Williams was originally a Devonian well, being deepened to the new pay zone, where tubing was run to 4,588 ft. More exploration of the Trenton lime in this area is expected to follow the Texas completion.

ILLINOIS COMPLETIONS

Wildcats

Clay County: Pure 1 Welsh, NW SW 25-3n-7e, dry at 3,185 ft., Tar Springs 2,305 ft., Glen Dean 2,520 ft., Hardinsburg 2,533 ft., Golconda 2,549 ft., Barlow 2,680 ft., Cypress sand 2,708 ft., Paint Creek 2,849 ft., Paint Creek sand 2,871 ft., Benoist sand 2,903 ft., Aux Vases sand 2,957 ft., Ste. Genevieve 3,020 ft., Rosiclare 3,034 ft., Fredonia 3,074 ft., McClosky 3,085 ft.

Lain O. & G. 1 Haynes, SW NE NE 25-3n-5e, dry at 2,975 ft., Kincaid 1,933 ft., Menard 2,131 ft., Tar Springs sand 2,246 ft., Glen Dean 2,325 ft., Golconda 2,413 ft., Weller 2,580 ft., Paint Creek 2,681 ft., Benoist sand 2,715 ft., Aux Vases sand 2,832 ft., Ste. Genevieve 2,859 ft., Rosiclare 2,878 ft., Fredonia 2,908 ft.

Clinton County: A. W. Gerson et al 1 Keister, SW SW SE 33-2n-1w, dry at 1,510 ft., Glen Dean 1,090 ft., Cypress sand 1,316 ft., Benoist sand 1,442 ft., Aux Vases sand 1,480 ft.

Texas 1 C. Zimmerman, NE SE NW 19-2n-1w, dry at 2,970 ft., Cypress 1,210 ft., Weller 1,260 ft., Benoist sand 1,390 ft., Aux Vases sand 1,468 ft., Ste. Genevieve 1,508 ft.

Smokey Oil 1 George Hord, NW SW SE 11-3n-2w, dry at 1,292 ft., Glen Dean 989 ft., Hardinsburg 980 ft., Golconda 1,015 ft., Barlow 1,082 ft., Cypress sand 1,145 ft., Paint Creek 1,258 ft., Benoist sand 1,272 ft.

Effingham County: Kingwood 1 G. Wendte, NW NE SE 21-6n-7e, dry at 3,032 ft., Menard 2,209 ft., Tar Springs sand 2,326 ft., Glen Dean 2,408 ft., Golconda 2,474 ft., Barlow 2,550 ft., Cypress sand 2,590 ft., Paint Creek 2,677 ft., Benoist 2,729 ft., Renault 2,789 ft., Aux Vases sand 2,794 ft., Ste. Genevieve 2,865 ft., McClosky 2,902 ft., St. Louis 3,020 ft.

Franklin County: W. C. McBride 1 B. L. Jones, NW NE NW 29-5s-3e, dry at 3,127 ft., Menard 2,016 ft., Glen Dean 2,249 ft., Hardinsburg 2,318 ft., Golconda 2,375 ft., Cypress sand 2,540 ft., Paint Creek 2,526 ft., Benoist sand 2,698 ft., Aux Vases sand 2,788 ft., Ste. Genevieve 2,830 ft., Levias 2,840 ft., Rosiclare 2,854 ft., Fredonia 2,912 ft., McClosky 2,929 ft.

Gallatin County: Carter 1 Brockett, SE NW 23-7s-8e, dry at 3,085 ft., Kincaid 1,846 ft., Menard 2,063 ft., Waltersburg 2,150 ft., Tar Springs 2,228 ft., Glen Dean 2,339 ft., Cypress sand 2,626 ft., Benoist sand 2,752 ft., Renault 2,829 ft., Aux Vases sand 2,910 ft., Ste. Genevieve 2,933 ft., McClosky 3,008 ft.

Jasper County: Kingwood 1 E. Martin, NW SW 23-7n-10e, dry at 2,731 ft., Glen Dean 2,143 ft., Golconda 2,216 ft., Barlow 2,283 ft., Weller 2,359 ft., Paint Creek 2,472 ft., Renault 2,530 ft., Aux Vases sand 2,564 ft., Ste. Genevieve 2,605 ft., Rosiclare 2,618 ft., McClosky 2,646 ft.

Macoupin County: W. R. Holmes 1 Stouffe, NE NE SW 21-8n-8w, dry at 465 ft.

Marion County: Texas 2 J. Mazanek, SW SW SE 36-4n-2e, dry at 2,335 ft., Glen Dean 1,662 ft., Golconda 1,728 ft., Cypress 1,831 ft., Weller 1,841 ft., Paint Creek 1,925 ft., Benoist 1,986 ft., Renault 2,050 ft., Aux Vases 2,057 ft., Ste. Genevieve 2,111 ft., Rosiclare 2,128 ft., Fredonia 2,157 ft., McClosky 2,191 ft., St. Louis 2,326 ft.

C. F. Beck 1 Phieps, NE NW NE 20-1n-4e, dry at 2,874 ft., Glen Dean 2,261 ft., Cypress 2,474 ft., Ste. Genevieve 2,787 ft., Rosiclare 2,831 ft.

Perry County: Magnolia 1 W. Ristaff, SE NE SW 13-4s-1w, dry at 1,905 ft., Menard 966 ft., Vienna 1,074 ft., Tar Springs 1,079 ft., Glen Dean 1,175 ft., Hardinsburg 1,225 ft., Golconda 1,265 ft., Barlow 1,387 ft., Weller 1,417 ft., Paint Creek 1,478 ft., Benoist 1,584 ft., Levias 1,718 ft., Rosiclare 1,773 ft., Fredonia 1,817 ft.

Richland County: Gulf and Helmerich & Payne 1 J. C. Ritter, S½ SE SE NE 35-5n-10e, pumped 83 bbl., 2,000 gal. acid, McClosky 3,010-20 ft., T.D. 3,033 ft., *pool opener*.

Fields

Boulder, Clinton County: Texas 1 B. Ward, SW NE NE 2-2n-2w, pumped 164 bbl. oil and 13 bbl. water, 9-qt. shot 1,221-30 ft., Benoist sand 1,212 ft., T.D. 1,230 ft.

Clay City, Clay County: Walt Duncan 1 Patridge, SW SE SE 2-3n-7e, pumped 200 bbl., natural, McClosky 2,947-53 ft., T.D. 2,955 ft.

Dale, Hamilton County: Pure 1 Union Central Life Ins., SW SW 31-5s-7e, pumped 80 bbl. oil and 40 bbl. water, 60-qt. shot 3,025-32 ft., Aux Vases sand 3,022-32 ft., T.D. 3,035 ft.

Shell 1 Morris-Shelton, NW SE NW 18-6s-7e, flowed 653 bbl., 25-qt. shot 3,064-81 ft., Aux Vases sand 3,038-64 ft., 3,067-75 ft., T.D. 3,089 ft.

Dundas, Jasper County: Pure 2 Dillman, E½ SE SW 18-5n-10e, dry at 2,915 ft., Golconda 2,333 ft., Barlow 2,482 ft., Cypress sand 2,524 ft., Ste. Genevieve 2,828 ft., Rosiclare 2,834 ft., Fredonia 2,851 ft., McClosky 2,855 ft.

Pure 4 Stanley, E½ SW SE 18-5n-10e, pumped 99 bbl., 5,000 gal. acid, McClosky 2,830-36 ft., T.D. 2,870 ft.

Pure 1 Bowers Consol., SW SW, 5-5n-10e, pumped and flowed 296 bbl., 5,000 gal. acid 2,832-37 ft., T.D. 2,837 ft.

Epworth, White County: Conoco 2 D. N. McQueen, SW

(Continued on Page 82)

ROCKY MOUNTAIN AREA

Cement Shortage Slows Drilling Operations

By T. R. INGRAM

DENVER, Colo.—Operators in the Rocky Mountain area have run into difficulties in finding cement with which to carry on drilling operations as a result of action taken by the War Department. Cement manufacturers received a request from the War Department, which is considered equivalent to an order, that beginning July 22 and continuing for 60 days, the entire output of the plants be reserved for its use and none sold to the consumer public. This action resulted from the tremendous building activities of the Government in this area in construction of munition plants, flying fields, and other war production units. The inability of drillers and contractors to buy cement through the customary channels has held up the spudding of several important exploratory wells, in some instances there being insufficient quantities available to set surface pipe. Local dealers' supplies have about been exhausted and the drillers are having to depend upon what stocks may be found in the hands of dealers in nearby territory.

Wildcat Activity

Several new and important wildcats were getting under way this week. One of these is Broderick & Gordon 1, approximately C SE SW 18-7n-86w, in the Chimney Creek district, Routt County, Colorado. The location is approximately 6 miles north of the Tow Creek field, operated by the Texas Co., and 2½ miles southwest of two wells drilled in 1926 and 1929 on the Chimney Creek structure by the Plateau Oil Co. and the old Midwest Refining Co. Both of these wells had gas in the Frontier, the Plateau well making 4,000,000 cu. ft. at 94 ft. It was abandoned in the Dakota at 1,320 ft. The Midwest well only tested the upper part of the Sundance at 1,717 ft.

Broderick & Gordon also will drill in the Pilot Butte area, Fremont County, Wyoming, in the CEL NE SW 27-3n-1w, and is moving in. The location is 1¾ miles due south of the Superior Oil Co. discovery well in the Tensleep, but in an area which has produced from the shallow shale wells.

The location for the Rio Oil Co., Inc. 1 Government, on the Little Poose Creek dome on the boundary between Rio Blanco and Routt counties, Colorado, is 240 ft. from the east line and 400 ft. from the north line of 28-3n-88w, a tentative location of which was given in this column 2 months ago. This will be an especially interesting test as outcrops around the entire structure show saturation in the Sundance.

H. Leslie Parker, of Denver, has completed negotiations whereby a group headed by R. S. Shannon, president of the Minnelusa Oil Corp., and including W. S. Broderick and D. G. Gordon, war-plant contractors, will test the Muddy and Dakota sands, the productive horizons in the Fort Collins-Wellington fields to the north, in the Denver basin near Boulder. Extra-heavy rotary equipment is being moved in over the old Continental Oil Co. 1 Borra, SE NE SW 5-1s-69w, abandoned at 6,381 ft. in 1939 in an unidentified horizon in the Pierre shale. This well had shows of gas and some light free oil at various depths in several benches of sand and shaly sand identified as belonging to the Hygiene series. The objective horizons are expected at 8,500 to 9,000 ft.

COLORADO COMPLETIONS

East Hiawatha, Moffat County: Mountain Fuel Supply Co. 3 Kuykendall, NE NW SE 22-12n-100w. T. D. 2,492 ft., 8⅝-in. 2,330 ft., 2½-in. tubing 2,323 ft., P.B. 2,326 ft., produced 325 bbl. first 24 hr. from sands at 2,029-55 and 2,225-72 ft. in the Wasatch.

Dry Lakes, Moffat County: Privett & Spangler 1 Stillings, NE SE SE 12-5n-96w. T.D. 2,280 ft., abandoned in shale.

WYOMING COMPLETIONS

Oregon Basin, Park County: Husky Refining Co. 1 Nielson, NW SW SW 33-51n-100w. T.D. 3,531 ft., top Tensleep 3,426 ft., completed for 625 bbl. per day.

Kirk Oil Co. 2 Connaghan, NW NW SE 29-51n-100w. T.D. 3,424 ft., completed in the Embar for 500 bbl. per day.

Ohio Oil Co. 2 Government-3, NW NE NE 32-51n-100w. T.D. 3,755 ft., 5½-in. at 3,696 ft., 450 bbl. per day from the Embar.

Ohio Oil Co. 3 Hallene-OPC, NW SE SW 29-51n-100w. T.D. 3,615 ft., completed for 800 bbl. per day in the Embar.

MONTANA COMPLETIONS

Bowdoin field, Phillips County: Montana-Dakota Utilities Co. 682, SW NE SW 9-32n-34e. T.D. 1,148 ft., Bowdoin sand 828-890 ft., Phillips sand 950-1,050 ft., 188,000 cu. ft., shut-in pressure 225 lb.

Montana-Dakota Utilities 683, SW NE SW 10-32n-34e. T.D. 1,090 ft., 5½-in. 780 ft., perforated liner on bottom, Bowdoin 685-845 ft., Phillips 890-930 ft., 606,000 cu. ft., 225 lb. press.

Montana-Dakota Utilities 690, C SW 16-32n-34e. T.D. 980 ft., Bowdoin 694-754 ft., Phillips 860-920 and 940-960 ft., 5½-in. 688 ft., perf. liner on bottom, 892,000 cu. ft., 225 lb. press.

Montana-Dakota Utilities 691, SW NE SE 33-33n-32e. T.D. 1,144 ft., 5½-in. 872 ft., perf. liner on bottom, Bowdoin 880-920 ft., Phillips 1,100-20 ft., 892,000 cu. ft., 290 lb. press.

Cut Bank field, Glacier County: Texas Co. 6 Bonnett, C NW NW 17-32n-5w. T.D. 2,957 ft., 7-in. 2,904 ft., Sunburst 2,865-98 ft., show oil, Cut Bank 2,900-48 ft., main pay 2,938-48 ft., swabbed 176 bbl. in 24 hr., preparing to shoot.

Glacier Production Co. 7 Lookhoff, NE NE SW 33-33n-5w. T.D. 2,902 ft., 7-in. 2,878 ft., Cut Bank 2,870-2,902 ft., main pay 2,893-2,902 ft., swabbed 137 bbl. in 24 hr., preparing to shoot.

Glacier Production 10 Miller, C NE SW 29-33n-5w. T.D. 2,969 ft., 7-in. 2,942 ft., Cut Bank 2,940-68 ft., main pay 2,950-68 ft., swabbed 110 bbl. in 24 hr.

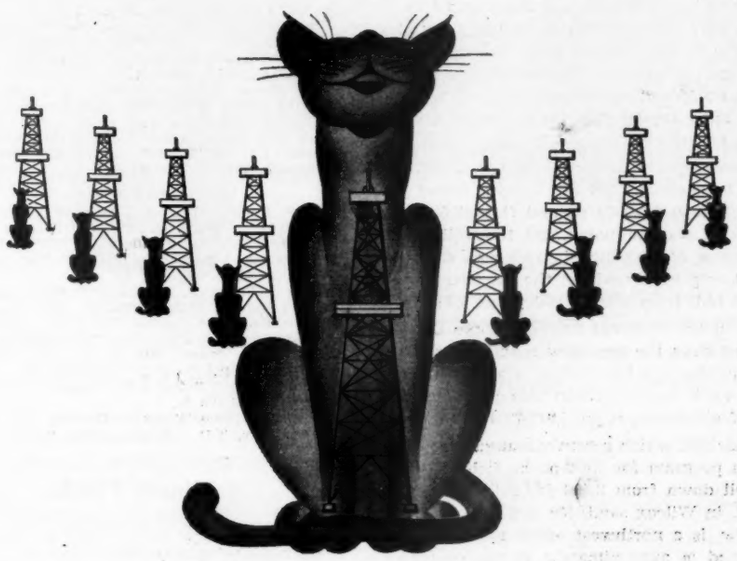
Kevin-Sunburst field, Toole County: Casper T. Olen 12 Engemoen, NE SE NW 14-35n-2w. T.D. 1,570 ft., contact at 1,523 ft. dry, shot oil in break in lime, acid, pumped 35 bbl. per day.

Deloraine Oil Co. 5 Solberg, SW SW SW 29-35n-3w. T.D. 1,772 ft., contact 1,770 ft., acid. 1,000 gal., averaged 8 bbl. on 10-day test.

56 Petroleum Co. 14 Jarrett, NE NW NW 29-35n-2w. T.D. 1,488 ft., 7-in. 1,405 ft., acid. 500 gal., pumped 55 bbl. oil 140 bbl. water per day.

Consolidated Gas Co. 1 Stillson, C NW SW 2-32n-2w T.D. 1,543 ft., 7-in. 1,488 ft., Sunburst 1,490-1,539 ft., 750,000 cu. ft. gas.

Rattlesnake Butte, Petroleum County: Watson Oil Co. 1 Austed, SW NW SE 22-13n-28e, abandoned at 1,540 ft.



DRILLED 9 WELLS

WITH SAME STRING OF PROTECTORS

A cat with nine lives has nothing on Patterson-Ballagh Protectors. From a Texas Field comes this report:

"One prominent Operator here drilled nine wells with the drill string equipped with the same Patterson-Ballagh Protectors. They were still on the pipe and seemed in good order when pipe was moved. Some of these Protectors were used in open hole, too."

Another Operator in the same field states his company drilled fourteen wells with the same string of Patterson-Ballagh Protectors.

That's service —"best bet yet."

Patterson-Ballagh Corporation

LOS ANGELES • HOUSTON • NEW YORK CITY

PATTERSON-BALLAGH LIP PROTECTORS

OKLAHOMA FIELD REPORT

Carter County Pool Opened North of Caddo Pool

By CARL HOOT

PURE Oil Co. got another strike in southern Oklahoma last week when its 1 Fraser, SW NE NE 26-3s-1, in Carter County averaged 15 bbl. of 40-gravity oil an hour through ¼-in. choke on drill-stem test with the packer set at 5,396 ft. It was open 3 hours and oil started to flow in 43 minutes. The first 3-hour flow was at the rate of 26 bbl. an hour. Started in April, the test has attracted considerable interest. At 4,476 ft. in sandy dolomite the well blew out with an estimated 15,000,000 cu. ft. of gas. Nearest production, with the exception of Pure's 1 Noble, is about 12 miles west to the edge of Wheeler, Graham and Hewitt pools. In 1939 Pure drilled 1 Noble, 1½ miles south of the Fraser well, to 8,501 ft. but plugged back to small production in Woodford shale at 4,160-4,324 ft. The first 10 days the well was reported to have averaged 96 bbl. of oil a day.

A second well and southwest offset at Northeast Luciene proved larger than the discovery. Danciger 1 Inselman, NE SE 5-20-2w, found the second Wilcox at 5,389-92 ft. and flowed 528 bbl. in 3 hours. It was estimated that the well would flow in excess of 1,000 bbl. in 12 hours. Oil is 40 gravity. Danciger 1 Province, the discovery well, flowed 480 bbl. from second Wilcox at 5,391 ft.

Drilling in the Crescent pool of Logan County has revived over the past few months and Layton sand production has shown a steady expansion. Last week Davon 1 Short was completed for 140 bbl. of oil from pay at 4,943-72 ft.

The Texas Co., which recently inaugurated a recompletion program for its Apache field, has the second well down from 3,490 ft., old total depth, to 3,610 ft. in Wilcox sand. No. 5 Smith, NE SW NW 2-5-12w, is a northwest offset to the discovery well and is approximately in the center of the field. Tests through 3-in. tubing indicated a flow of 668 bbl. of oil an hour, exceeding by far the original potential of 247 bbl. an hour.

In Pottawatomie County, J. E. Crosbie and Atlantic Refining Co. 1 Turner, a wildcat in NE NW SW 1-9-4, between the Earlsboro and King pools and 2½ miles north of Hunton lime production in the Hotulke pool, found water in both first and second Wilcox sand zones at 4,430 ft. and 4,538 ft. A core from 4,226-44 ft. recovered 5 ft. of shale and 3 ft. of lime with a show of oil. Operators were to plug back and retest the Hunton found at 4,232 ft.

IF YOU KNOW THIS GENTLEMAN

● kindly communicate with me. This picture was taken ten or twelve years ago when he was in Great Falls, Montana. He is now believed to be in the oil and gas business somewhere in the United States.

Write to: M. D. McCloud
156 E. 6th St. St. Paul, Minnesota

OKLAHOMA COMPLETIONS

Wildcats

Hughes County: Aldridge & Aldridge 1 Kendall, W½ SW NW 35-6-8, dry, T.D. 1,650 ft., sand 612 ft., 799 ft., and 1,605 ft.

Lincoln County: D. B. Malernee 1 Trawick, SE SE SW 25-16-5, dry, T.D. 4,283 ft.

Seminole County: Wood Oil and Mid-Continent 1 Ligon, NE NW SE 30-8-6, dry, T.D. 4,525 ft., Woodford 4,070 ft., Sylvan 4,226 ft., Viola 4,285 ft., dolomite 4,370 ft., Wilcox 4,385-90 ft., second Wilcox 4,517-25 ft.

Fields

Crescent, Logan County: Davon 1 Short, SW NW NE 27-17-4w, flowed 140 bbl., Layton 4,943-72 ft.

Cushing, Payne County: Oklahoma Gasoline 1 Cassida, NE SE 3-18-6, pumped 5 bbl., Burgess sand 3,281-3,300 ft., T.D. 3,304 ft.

Ingalls, Payne County: T. E. Berry 1 fee, NE SE SE 12-19-4, flowed 313 bbl., Misener sand 3,797-3,802 ft., T.D. 3,825 ft.

Lucien Northeast, Noble County: Danciger 1 Inselman, NE SE 5-20-2w, flowed 528 bbl. in 3 hr., second Wilcox 5,389-92 ft.

Miscellaneous

Okfuskee County: Bryant & Moffitt 1 Dean, SW NE 22-10-11, 2,500,000 cu. ft. gas, Gilcrease sand 2,392-98 ft.

H. C. Cook 1-A Morton, SW SE NW 4-12-11, dry, T.D. 2,662 ft.

Okmulgee County: J. J. Deaner 3 McGee, SE NE NE 17-14-11, dry, T.D. 2,500 ft.

Charles Rupe 1-A Jacobs, NW NW 31-16-14, pumped 20 bbl., sand 1,612-45 ft., T.D. 1,655 ft.

Osage County: Peters Pet. 2, SW cor. 11-22-10, dry, T.D. 2,141 ft.

Seminole County: Burns Oil 1 Rogers, NW NE 19-8-7, dry, T.D. 4,276 ft.

Tulsa County: Tide Water 38 Corbray, SW SE SW 15-17-12, dry, T.D. 1,560 ft., input well.

Illinois Fields

(Continued from Page 80)

SE SW 32-5s-10e, dry at 2,101 ft., Kincaid 1,891 ft., Degonia 2,038 ft., Clore 2,089 ft.

Griffin, Wabash County: Longhorn 35 Helm, NE NE SW 22-3s-14w, pumped 400 bbl., natural, Menard 2,003 ft., pay sand 2,110-49 ft., T.D. 2,149 ft.

Hoodville, Hamilton County: Texas 1 W. E. Betts, NW SE SW 11-6s-6e, pumped 15 bbl. oil and 18 bbl. water, 10-qt. shot 3,100-05 ft., 20-qt. shot 3,110-22 ft., Aux Vases 3,092 ft., Aux Vases sand 3,098-3,104 ft., 3,110-26 ft., T.D. 3,272 ft.

Inman, Gallatin County: Skelly 2 Egyptian Tie & Timber, NE SW NE 21-8s-10e, pumped 12 bbl. oil and 35 bbl. water, 30-qt. shot 1,977-97 ft., Waltersburg 1,986-97 ft., T.D. 1,997 ft.

Buell & Herndon 4-A Egyptian Tie & Timber, SW SW 15-8s-10e, pumped 35 bbl., natural, Waltersburg sand 1,983-91 ft., T.D. 1,991 ft.

Keensburg, Wabash County: Magnolia 1 H. Milburn, SW NE SE 20-2s-13w, pumped 15 bbl. oil and 67 bbl. water, perf. 2,839-44 ft., 5,000 gal. acid, McClosky 2,812-15 ft., 2,839-48 ft., T.D. 2,900 ft., P.B. 2,870 ft.

Louden, Fayette County: Carter 3-D R. Fortner, SE NE 10-8n-3e, flowed 100 bbl. oil and 5 bbl. water, 100 gal. acid, Devonian 3,052 ft., pay 3,136-40 ft., T.D. 3,140 ft.

Carter 4 Crum, SW NE 16-7n-3e, pumped 12 bbl., 20-qt. shot 1,566-72 ft., 40-qt. shot 1,564-76 ft., Weller 1,560 ft., T.D. 1,576 ft.

Noble, Richland County: Pure 25 Coen, NW NE 9-3n-9e, pumped 64 bbl. oil and 60 bbl. water, perf. 2,595-99 ft., Weiler 2,590 ft., pay 2,595-2,623 ft., T.D. 2,650 ft., P.B. 2,609 ft.

North Benton, Franklin County: Armstrong & Day 1 Wayman-Kimble, NW NW SW 1-6s-2e, pumped 84 bbl., natural, McClosky 2,854-60 ft., T.D. 2,870 ft.

Parkersburg, Edwards County: Sinclair 1 A. Bierhaus, N¼ NW SE 6-1n-14w, pumped 23 bbl., 10-qt. shot 2,853-66 ft., Cypress 2,769 ft., T.D. 3,216 ft., P.B. 2,834 ft.

Phillipstown, White County: Jarvis Bros. et al 3 Spencer, N½ NE SW 31-4s-11e, pumped 35 bbl. oil and 23 bbl. water in 16 hr., 20-qt. shot 2,312-16 ft., Tar Springs sand 2,307-24 ft., T.D. 2,324 ft., P.B. 2,320 ft.

St. Jacob, Madison County: M. D. Bryant et al 1 Kirri, SW SW NE 16-3n-6w, pumped 395 bbl., 3,000 gal. acid, Trenton 2,310 ft., pay 2,374-79 ft., T.D. 2,394 ft.

Ste. Marie, Jasper County: Olson Oil 1 E. Kraus, S½ SE 6-5n-14w, pumped 220 bbl., 5,000 gal. acid, McClosky 2,847-57 ft., T.D. 2,877 ft., P.B. 2,855 ft.

South Lawrence, Lawrence County: L. S. Heath 1 Green, NW NW SE 27-2n-12w, dry at 2,034 ft., Biehl 1,443 ft., Menard 1,576 ft., Glen Dean 1,661 ft., Golconda 1,777 ft., Barlow 1,850 ft., Paint Creek 1,956 ft., Benoist sand 2,009 ft.

West Grayville, White County: P. O. Wall 2 Kershaw, SE NW NE 22-3s-10e, dry at 2,902 ft., Menard 2,345 ft., Glen Dean 2,566 ft., Hardinsburg sand 2,610 ft., Golconda 2,680 ft., Barlow 2,792 ft., Cypress 2,834 ft.

Indiana Fields

(Continued from Page 75)

made before any attempt to shut out water will be made. The well is producing from the McClosky at 2,737-42 ft. and the last gage taken was 5 bbl. of oil and 9 bbl. of water in 9 hours, swabbing.

INDIANA COMPLETIONS

Gibson County: J. Dee, tr., 1 Wyatt, NW SE Don. 81-1n-10w, dry, T.D. 1,889 ft., Cypress 1,615-30 ft.

R. D. Brown, Inc., 1 Lehman, SW SE NW 36-1s-10w, pumped 40 bbl., sand 1,347-69 ft., T.D. 1,391 ft.

Knox County: J. E. Baner 1 Kuhn, NW NE NE 2-1n-9w, dry, T.D. 1,650 ft.

Pike County: Stroble & Bury 1 Blaize, S½ NE NW 12-1s-9w, dry, T.D. 1,685 ft.

Scales & Dawson 1 Ray, SE NE SW 16-3s-7w, dry, T.D. 1,171 ft.

Porter County: W. H. Moulton 1 Dell, SW SW NE 1-33n-7w, dry, T.D. 1,087 ft., Trenton 1,007 ft.

Posey County: John Lindas 3 Seifert, SE NE NW 30-6s-12w, pumped 50 bbl., Mansfield 1,080-1,113 ft.

Spencer County: C. G. Farrelly 4 Protsman, SW SE 1-6s-4w, dry, T.D. 800 ft.

EASTERN KENTUCKY

ASHLAND, Ky. — Drilling operations failed to show any definite change in eastern Kentucky last week. Two new locations were reported but most activities were on the same level as displayed in the past few weeks.

Kentucky-West Virginia Gas Co. completions:

Pike County: 677 J. S. Cline, Island Creek, 298,000 cu. ft., shale, T.D. 3,346 ft.

5412 F. B. Lowe, Big Branch, 499,000 cu. ft., Salt sand, T.D. 1,118 ft.

670 Laura Jackson, Johns Creek, dry, T.D. 3,142 ft.

Martin County: 5313 W. B. Preece, Coldwater Fork, 1,237,000 cu. ft., Big lime and shale, T.D. 2,730 ft.

Louisiana Gulf Coast

(Continued from Page 71)

after the well showed for a producer in two sands at 6,019-50 ft. and at 6,427-34 ft. This will be the second well in the field to be dual completed and it appears that this will become a common practice due to the number of sands that have been found to overlie the structure.

LOUISIANA GULF COAST COMPLETIONS

Fields

Avery Island, Iberia Parish: Humble 2 Petit Anse Co., 288 bbl., 5/32-in. choke, perf. casing 8,995-9,002 ft., T.D. 9,242 ft.

Big Island, Rapides Parish: Roland S. Bond 1 J. H. Overton, dry, T.D. 6,914 ft.

East Hackberry, Cameron Parish: Texas 33-B State, dry, T.D. 10,104 ft.

South Roanoke, Jefferson Davis Parish: Union Sulphur 3 T. R. S. Farms, 1,113,000 cu. ft. gas and 7 bbl. distillate 9/64-in. choke, perf. 9,570-82 ft., T.D. 11,015 ft.

Texas Gulf Coast

(Continued from Page 77)

Fairbanks, Harris County: Union 1 Broh, 164,000,000 cu. ft. gas open flow, perf. casing 6,792-6,817 ft., T.D. 7,602 ft.

Fig County, Chambers County: Texas 9 Broussard, 774 bbl., ¼-in. choke, perf. casing 8,563-71 ft., T.D. 8,679 ft.

Francitas, Jackson County: Skelly 2 C. Millisu, 57 bbl., ⅛-in. choke, perf. casing 7,395-98 ft., T.D. 8,000 ft.

Maurbro, Jackson County: Cities Service 2 Prichett, 95 bbl., ⅛-in. choke, perf. casing 5,218-35 ft., T.D. 5,866 ft.

Humble 8 Strauss, 192 bbl., ¼-in. choke, sand 5,214-23 ft.

North La Ward, Jackson County: Barnsdall 1 Graves, 186 bbl., ⅛-in. choke, top sand 5,193 ft., T.D. 5,220 ft.

Cities Service 3 Graves, 280 bbl., ¼-in. choke, perf. casing 5,608-12 ft., T.D. 5,673 ft.

Oyster Bayou, Chambers County: Sun 1 J. J. Hebert, dry, T.D. 8,453 ft.

Stowell, Jefferson County: Glenn McCarthy 1 McFaddin, 237 bbl., ⅛-in. choke, perf. casing 8,756-58 ft., T.D. 8,500 ft.

West Beaumont, Jefferson County: Stanolind 6 Treadway Land Co., 119 bbl., ⅛-in. choke, perf. casing 5,358-88 ft., T.D. 5,400 ft.

NORTH LOUISIANA, ARKANSAS

Midway Field Extended Half Mile South

SHREVEPORT, La.—Seven completions in the Haynesville field and four at Midway ended a busy week for the two most active fields in the North Louisiana-Arkansas area. Barnsdall 3 McClaine flowed 24 bbl. an hour through choke to extend the Midway field ½ mile south at the eastern end.

Barnsdall 3 Powell, on the northwest end of the field, had not been abandoned at last report but showed water on drill-stem test and was running low with top of porosity at —6,228 ft.

NORTH LOUISIANA COMPLETIONS

Wildcat, La Salle Parish: N. H. Wheless 1-E Louisiana Delta, SE NE 10-6-4, dry, T.D. 5,650 ft., Wilcox 3,010 ft., Midway 5,638 ft., show oil 4,430 ft.

Haynesville, Claiborne Parish: T. L. James 1 Waller-Taylor, NE SE 11-23-8w, 149 bbl. in 4 hr., Pettit 5,266-90 ft., T.D. 5,351 ft.

Arkansas Fuel Oil 7-A Beene, NE SW 13-23-8w, 25 bbl. an hr., Pettit 5,232 ft., T.D. 5,318 ft.

Phillips 1 Pearl Waller, NE NE 14-23-8w, 253 bbl., Pettit 5,254-78 ft., T.D. 5,335 ft.

Ohio 1 Hudson 3-P, NE SE 17-23-8w, 147 bbl. in 9 hr., Pettit 5,351-61, 5,351-5,409 ft., T.D. 5,485 ft.

R. A. Stacy 1 Knox, NE NE 20-23-8w, 35 bbl. an hr., Pettit 5,382-5,444 ft., T.D. 5,490 ft.

Ohio 1 Harp-Lee Unit P, NE NE 26-23-8w, 290 bbl. in 8 hr., Pettit 5,391-5,490 ft., T.D. 5,550 ft.

Ohio 1 Sherman-Lee Unit P, SW NE 26-23-8w, 211 bbl. in 8 hr., Pettit 5,431-5,501 ft., T.D. 5,585 ft.

Little Creek, La Salle Parish, O'Meara Bros. 2 Tremont, SW NW 24-9-1, 150 bbl., perf. 2,430-47 ft., T.D. 2,600 ft.

Nebo, La Salle Parish: H. L. Hunt F-96 Goodpine-La Salle, 39-7-3, 170 bbl., perf. 4,166-72 ft., T.D. 4,245 ft.

ARKANSAS COMPLETIONS

Hillsboro, Union County: Wm. M. Dalton 1-C Union Saw Mill, NE SW SW 13-18-14w, pumped 18 bbl., Nacatoch 2,220 ft., T.D. 2,236 ft.

Macedonia, Columbia County: G. H. Vaughn 1 Jameson-Willis unit, N½ NW 20-18-21w, flowed 96 bbl. distillate, Smackover 8,880 ft., T.D. 8,900 ft.

Midway: Arkansas Fuel Oil 1 Turner, SW SW 12-15-24w, flowed 13 bbl. on hr., Smackover 6,376 ft., T.D. 6,470 ft.

Southwood Oil 1 Turner, SW SE 12-15-24w, dry, T.D. —6,248 ft.

Barnsdall 3 Powell, NE NW 10-15-24w, dry, T.D. —6,228 ft.

Barnsdall 3 McClain, NW SW 13-15-24w, 24 bbl. an hr., Smackover —6,241-45 ft.

South El Dorado, Union County: Sam Sebersky 1 Pickering, NW NE SE 17-18-15w, dry, T.D. 3,018 ft.

ALABAMA COMPLETIONS

Covington County, NE of Rome: Strake Pet. Co. 1 Bullard, S½ SW SE 10-2n-14e, dry, T.D. 6,616 ft.

Franklin County, 5 mi. NW of Russellville: E. O. Heath, Jr., 1 Hester, SW SE SW 4-6s-12w, dry, T.D. 2,005 ft.

Kansas Fields

(Continued from Page 74)

Continental 3 Redetzke, SE SE SW 20-16-13w, 571 bbl., Arbuckle 3,384-89 ft.

Trapp, Barton County: Texas 2 Fouts, NW SW 4-16-13w, dry, T.D. 3,398 ft.

T. C. Johnson 12 Bitter, SW SW 8-16-13w, dry, T.D. 3,555 ft., sand 3,540 ft., water-disposal well.

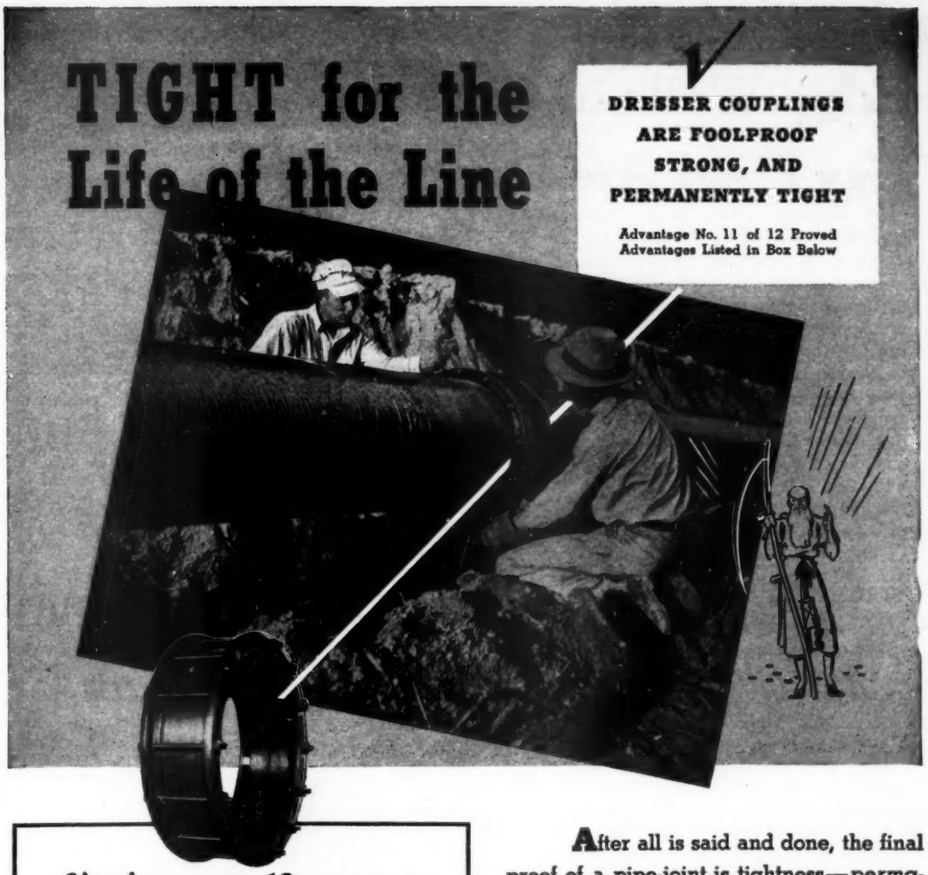
Trapp, Russell County: Phillips 1-A Kramer, NW SW 14-15-14w, pumped 198 bbl. in 15 hr., Arbuckle 3,343-45 ft.

Wilkens Southeast, Ellsworth County: Darby Oil 1 Colberg, N½ NW SW 33-17-9w, dry, T.D. 3,261 ft.

NEBRASKA

ST. JOSEPH, Mo.—Comparative quiet has settled on the Nebraska portion of the Forest City basin, one well going down in Richardson County, in the Dawson pool area, and one Hunton test being made in the Barada pool.

Skelly Oil Co.'s two Viola limestone wells in the Dawson pool now are established as small producers. No. 1 Wiltse in C E½ NW SE 10-1n-14e, is producing 23 to 24 bbl. of oil daily. No. 1 Smith in C E½ SE SE 3-1n-14e is producing 14 to 15 bbl. of oil daily.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APPALACHIAN FIELDS

Edge Wells in Oriskany Gas Field Are Dry

PITTSBURGH, Pa. — In West Virginia, two wells testing the edges of the Oriskany gas field extension in Roane and Jackson counties were dry as well as another Oriskany failure in Wood County. A test on the southwest edge of the Big lime oil pool in the heart of the Kanawha County Oriskany gas field also was dry. Offsetting this was some fair shallow-sand production. In Southwest Pennsylvania another good gas well is being completed in the deep drilling on Chestnut Ridge in Fayette County.

SOUTHWEST PENNSYLVANIA

In Forward Township, Allegheny County, Griswold et al are shut down in a test on the Edgar Woods farm after finding some oil in the Bayard or Elizabeth sands at about 3,000 ft. There have been several shows of a heavy oil in the Bayard in recently drilled gas wells but none so pronounced. The well will be tubed and a test of its production made. There was also some gas present and the test appears as an edge pool well.

On Chestnut Ridge in South Union Township, Fayette County, Peoples Natural Gas Co. resumed drilling 6 Piedmont Coal Co. after casing to 6,544 ft. and at 6,560 ft. there was a total gas volume of 5,800,000 cu. ft. from the chert beds of the Onondaga chert topped at 6,543 ft. This is one of the largest Onondaga wells on the Summit.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County, Burrell Township: Shelocta Oil & Gas 1 McElwain, 164,000 cu. ft. gas, Bradford sand 3,255-3,318 ft., gas 3,258 and 3,290 ft., T.D. 3,600 ft.

Kiskiminitas Township: Chestnut Ridge Gas Co. 2 Shirey, 152,000 cu. ft. gas, Thirty-foot sand 1,638-77 ft., gas 1,648 ft., T.D. 2,048 ft.

Fayette County, German Township: Fayette County Gas 2 Rider, 234,000 cu. ft. gas, Fifth sand 2,310-67 ft., gas 2,312-32 ft. and 2,344 ft., T.D. 2,579 ft.

Peoples Natural Gas 1 Sterling & Graham, dry, T.D. 4,306 ft.

Greene County, Center Township: Manufacturers Light & Heat 1 Fordyce, 258,000 cu. ft. gas, Elizabeth 3,508-12 ft., T.D. 3,559 ft.

Jackson Township: Manufacturers Light & Heat 1 Evans, 18,00 cu. ft. gas, Fifty-foot sand 2,965 ft., T.D. 3,510 ft.

WEST VIRGINIA

In Poca district, Kanawha County, Columbian Carbon Co. drilled 8 Homer C. Jones through the Big lime to 1,575 ft. and after acidizing with 1,500 gal. plugged it as dry. This is on the southwest edge of the farm and limits the Big lime oil pool in that direction.

WEST VIRGINIA COMPLETIONS

Calhoun County, Center district: Hope Natural Gas 8618 Bennett, 100,000 cu. ft. gas, Injun 2,023-89 ft., shot 2,086-89 ft., T.D. 2,129 ft.

Sheridan district: South Penn Natural Gas 3 Rothlisberger, Maxton sand gas well deepened, 50 bbl., T.D. 1,825 ft.

Sherman district: Creed Yoak et al 2 Scotch McDonald 2 lease, 15 bbl. Injun sand, T.D. 2,268 ft.

W. H. Ayers 1 Summers, 4 bbl., Keener, T.D. 1,835 ft.

W. V. Knight 1 Ferrell, 4 bbl., Injun sand, T.D. 2,178 ft.

Clay County, Buffalo district: Pittsburgh & West Virginia Gas 7863 Elk River Coal & Lumber, 476,000 cu. ft. gas, Maxton sand, T.D. 1,715 ft.

Pittsburgh & West Virginia Gas 7864 Elk River Coal & Lumber 152,000 cu. ft. gas, Injun sand, T.D. 2,215 ft.

Doddridge County, West Union district: Edmond Tate 1 McConnell 200,000 cu. ft. gas, salt sand, T.D. 1,204 ft.

Gilmer County, Center district: McCall Drlg. 1 Turner, drilled deeper, 2 bbl. and 200,000 cu. ft. gas, Maxton sand, T.D. 1,626 ft.

Marshall County, Washington district: Parriott & Hazlett 1 Moore, dry, Big Injun, T.D. 1,407 ft.

Monongalia County, Battelle district: Hope Natural Gas 5486 Shriver, drilled deeper, started Fifth sand, no added gas through Bayard, 266,700 cu. ft. gas from Fourth and Fifth sands, T.D. 3,400 ft.

Taylor County, Booths Creek district: Pittsburgh & West Virginia Gas 6130 Ables, 400,000 cu. ft. gas, Big Injun 1,133 ft., T.D. 1,139 ft.

Upshur County, Buckhannan district: Pittsburgh & West Virginia Gas 7876 Boran, 75,000 cu. ft. gas, Benson sand 4,662-66 ft., T.D. 4,713 ft.

ORISKANY GAS FIELDS

Jackson County, Ravenswood district: Columbian Carbon 2 Starcher, 3,110,000 cu. ft. gas, Oriskany 5,284 ft., shot 5,285-5,345 ft., T.D. 5,366 ft.

Columbian Carbon 1 Hutchinson, dry, Oriskany 5,302 ft., T.D. 5,385 ft.

Ripley district: Columbia Carbon 2 Hyre, 12,015,000 cu. ft. gas, Oriskany 4,955-72 ft., shot 4,953-5,008 ft., R.P. 1,630 lb., T.D. 5,043 ft.

MICHIGAN OPERATIONS

Tank Car Shortage Prevents Increase in Crude Output

By OTTO C. PRESSPRICH

SAGINAW, Mich.—P. J. Hoffmaster, Michigan supervisor of oil wells, has decided not to recommend further increases in Michigan production quotas until transportation problems in connection with the principal Reed City field have been solved and there is a more definite opinion concerning possibility of new development.

Michigan has been asked to produce 66,800 bbl. of oil a day in August but oil men who attended a hearing called by the state Oil Advisory Board expressed the opinion that the quota cannot be met.

"Demand for Michigan oil appears to be in excess of what we can produce without increasing quotas and finding new fields," Mr. Hoffmaster commented. "We probably could get more oil from the Reed City and Headquarters fields, but the question is whether we need it worse now to meet the eastern crisis or will need it more 6 months from now."

So long as the shortage of tank cars continue, producers pointed out, there is little use in increasing the take from the Reed City wells.

Clare County Well to Test Dundee and Monroe

Field operations receded somewhat last week while attention focused on a test in Franklin Township, Clare County, as Freeman Oil Co., after getting oil showings at 3,200 ft., decided to drill deeper to test Dundee and possibly the Monroe strata. The area being tested is about 4 miles south of the Headquarters field.

Eleven completions were recorded, new production being featured by a well drilled in Richmond Township, Osceola County, by Ohio Oil Co. which produced initially at 840 bbl. a day. The well, the 2 Bauer, is in Section 5. Ohio Oil Co. 1 Johnston, completed in the same section, was producing 125 bbl. a day, after acid treatment and in Osceola's Lincoln Township, Section 32, Gulf Refining Co. was getting 150 bbl. a day from the 2 McIntire.

Other production resulted from new wells in Monitor Township, Bay County, and in the Clare Winterfield gas field where Taggart Brothers Co. of Big Rapids reported three completions, the main one being a producer in Section 32 which was rated at 12,500,000 cu. ft. a day. The completions record included four wildcat failures—in Allegan, Arenac, Lake, and Newaygo counties.

Drilling permits for the year increased to 346 as the state Conservation Department reported 16 more issued for tests in 12 counties, indicating a continuance of exploratory operations. Two permits each are for drilling operations in Bay, Lake and Montcalm counties. The others are for tests in Clare, Arenac, Ottawa, Kalamazoo, Oakland, Oceana, Osceola, and Van Buren counties.

MICHIGAN COMPLETIONS

Allegan County, Dorr Township: Muskegon Development Co. 1 Pelka-Herp communitized, C E½ NE NE 19-4n-12w, wildcat, dry, T.D. 1,592 ft.

Arenac County, Deep River Township: Don Rayburn-McKenna Oil Co. 1 Wojtowicz, C N½ NW SE 22-19n-4e, wildcat, dry, T.D. 3,102 ft.

Bay County, Monitor Township: Gulf Refining Co. 2 Marston, C N½ SW SE 1-14n-4e, pumping 85 bbl., acidized, T.D. 2,885 ft.

Clare County, Winterfield Township: Taggart Brothers Co. 115 Vizina-

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Morrison et al, C SE 21-20n-6w, 200,000 cu. ft. gas, T.D. 1,365 ft.
Taggart Brothers Co. 77 Phares-Goodrich-Long, C NE Sec. 32, 12,500,000 cu. ft. gas, T.D. 1,309 ft.
Taggart Brothers Co. 120 Kirschner-State, C NW Sec. 27, 475,000 cu. ft. gas, T.D. 1,342½ ft.
Lake County, Dover Township: C. L. Maguire, Inc., 1 Ne-bo-shone, SW NE SE 30-20n-11w, wildcat, dry, T.D. 1,350 ft.
Newaygo County, Ashland Township: H. C. Nelson-Voorhees Drilling Co. 1 Kilts, C SE SE SW 10-11n-13w, wildcat, dry, T.D. 3,401 ft.
Osceola County, Lincoln Township: Gulf Refining Co. 2 McIntire, C SE SE 32-18n-10w, 150 bbl., acidized, T.D. 3,537 ft.
Richmond Township: Ohio Oil Co. 2 Bauer, C N½ SE SW 5-17n-10w, 840 bbl., T.D. 3,549 ft.
Ohio Oil Co. 1 Johnston, C N½ SE SE Sec. 5, 125 bbl., acidized, T.D. 3,519 ft.

CANADIAN FIELDS

East Extension Indicated For North Turner Valley

By VICTOR LAURISTON

CHATHAM, Ont.—Crude and natural-gasoline production from all Alberta fields for the week ending July 27 averaged 26,281 bbl. daily, compared with 27,648 bbl. the previous week and 27,685 bbl. for the corresponding week last year. The daily average included 25,439 bbl. of crude and 592 bbl. of natural gasoline from Turner Valley and 250 bbl. of crude from outside fields.

Turner Valley Allowables

The Alberta Conservation Board has set the aggregate daily allowable for Turner Valley crude producers at 25,497 bbl. compared with 25,186 bbl. daily in July. The largest individual producers are: Mamor Oil 3, with 835 bbl.; Atlas-British Dominion 2, with 676 bbl.; Foothills 12, with 661 bbl.; Major Oils 7, with 649 bbl.; Home Oil 2, with 625 bbl., and Major Oil 2 with 604 bbl. Out of the 16 largest producers only 1, Northwest-Hudson's Bay 6 in the southwest field, is outside North Turner Valley.

TURNER VALLEY COMPLETIONS

Major Oil 7, LSD 7, 8-21-3w5, T.D. 8,441 ft., Madison 7,925 ft., flowed 2,339 bbl., bottom-hole pressure 2,525 lb. and 895 cu. ft. gas-oil ratio; August allowable 649 bbl. daily.
Major Oil 8, LSD 13, 4-21-3w5, T.D. 7,774 bl., Madison 7,270 ft., flowed 52 bbl. an hr. after first acid.
Foothills Oil & Gas 10, LSD 2, 4-21-3w5, T.D. 8,352 ft., Madison 6,619 ft., flowed 1,106 bbl.; August allowable 513 bbl. daily.
Home Oil 10, LSD 15, 33-20-3w5, T.D. 7,774 ft., Madison 7,147 ft., acidized, flowed 175 bl. an hr., testing.

TURNER VALLEY LIME TESTS

North Turner Valley: Northwest-Hudson's Bay 7, LSD 14, 8-21-3w5, below 8,302 ft., with Madison 8,169 ft.
Foothills Oil & Gas 9, LSD 14, 27-20-3w5, bottoming at 7,210 ft., with Madison at 6,224 ft., redrilling with whipstock from 6,345 ft.
Royalite Oil 64, LSD 13, 22-20-3w5, Madison lime around 8,302 ft.

Deep Test Abandoned

In the south end of the North Turner Valley extension, Major Oils 12, LSD 4, 36-21-3w5, was abandoned in the upper Blairmore formation at 9,379 ft. Except for Okalta Oil 6, on the southwest flank, which encountered water in the lime after drilling to 10,209 ft., Major 12 was the deepest test in Turner Valley and is the deepest yet drilled in the north end of the field. Location was about 3 miles northwest of Atlas-British Dominion 2, the most northerly producer.

Extension Possible

Possibilities of an easterly extension of the North Turner Valley producing area are indicated by the Atlas-British Dominion 3, LSD 3, 17-21-3w5, which got the grit-bed marker above the upper Blairmore formation at 5,100 ft., somewhat shallower than Atlas-British Dominion 2, immediately to the west, which is the most northerly producer in the field. The marker was also shallower than in Northwest-Hudson's Bay 7, immediately south; indicating that the formations rise to the north and east of the tests now drilling in the north extension.

Northend Tests Resume

Work has been resumed on the important exploratory tests of Northend Petroleums, north and east of the present North Turner Valley outpost producers. Northend 3, LSD 4, 20-21-3w5, a mile north of the present most northerly producer, is in the Blairmore formation below 8,150 ft. and is now the most northerly active test in the field. Northend 1, LSD 12, 9-21-3w5, at 7,515 ft. and Northend 2, LSD 13, 9-21-3w5, at 5,255 ft., both in the Blairmore formation, are east flank tests, north and east of Major Oils 7 producer. Completion of these wells as producers would open an important east-flank area to development.

Central Area

West of the northern part of the old Central Turner Valley field, Royalite-Lowery 1 has been spotted in LSD 6, 11-20-3w5, on acreage of Lowery Petroleums. The test is more than a mile south and east of the nearest North Turner Valley producer.

Devonian Test Planned

The most important new development in Turner Valley is a project for a joint test by a group of major companies to be drilled to the Devonian limestone at an estimated cost of $250,000. Location would be in the gas-cap area of Central Turner Valley, which is the high point of the structure and where, it is anticipated, the Devonian could be reached at the minimum drilling depth. The original intention was to deepen Royalite 4, the discovery well, which finished as a wet gas-naphtha producer in the Madison lime around 3,740 ft. but later plans call for an entirely new location somewhat to the west, to avoid encountering the Turner Valley sole fault at depth. The deepest test yet drilled in the gas-cap area was McLeod Oil 4, which got the Banff shale below the Madison but faulted back to the Fernie shales at 5,870 ft., and finished in the cardium sandstone at 7,751 ft. Indications are that if the fault could be avoided, a producing horizon in the Devonian lime might be reached around 8,000 ft., which is a normal depth for Madison limestone production in the newer crude areas. Imperial Oil is prepared to back the joint test to the extent of 50 per cent, and several of the major producing companies are considering the project.

Walton Creek Test

Plans are being completed for a joint wildcat test by Anglo-Canadian Oil Co. and Home Oil Co. on the Walton Creek structure, in the northern foothills northwest of the Grease Creek area. The area is in Townships 32 and 33, Ranges 7 and 8w5, on the foothills strike from Turner Valley to the northwest. The immediate field is untested, but some outlying tests at various times got encouraging indications, including the Mount Stephen well, 25-32 7w5, which had gas at 2,900 ft., and the old Monarch Oil well, 5-32-6w5, which had some oil shows above 3,608 ft. Seismic surveys have been carried out and tentative location has been made for a test to spud late this month.

Peace River Block

Dr. G. S. Hume, geologist for the Dominion oil controller, left recently to inspect the work of survey parties in the Peace River Block of

(Continued on Page 91)

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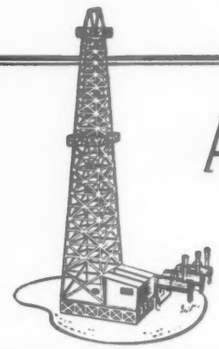

Among the Drilling

HOLLANDSWORTH Drilling Co., Longview, Tex., has the contract to drill Stanley A. Thompson 1 J. M. Spurlock, J. M. McDonald Survey, about 6½ miles north of the discovery well in the Club Lake pool of southeastern Hunt County, Texas, and about 10 miles southeast of Greenville. The wildcat is located on a block of some 560 acres and is based on a fault play. It is contracted to the Georgetown lime, but if structural conditions warrant, it will be taken to the Paluxy sand.

C. O. HOLLOWAY, Tyler, Tex., and J. H. BULLARD, Kilgore, Tex., are reported to have taken the contract to drill a 3,600-ft. wildcat in Section 7-20-27, southern Miller County, Arkansas. It is Dr. L. M. Lile 1 Jasper Mirable.

TWO STATES Drilling Co., Dallas, Tex., have the contract for Fullerton Oil Co. 4 Wilson, an inside location in the Fullerton deep area of Andrews County, West Texas.

MONAHAN Drilling Co., Tulsa, is drilling Sinclair Prairie Oil 1 Ella McCarty, a 6,200-ft. test 3½ miles southwest of Nocona in the Belcherville (Sanders) pool of Montague County, Texas.

HARBAR Drilling Co., Wichita, Kans., have the contract for Sinclair Prairie Oil Co. 1 Mary McCall, a 6,200-ft. test in the Belcherville (Sanders) pool of Montague County, Texas, 3½ miles southwest of Nocona.

T. J. CONWAY, Kilgore, Tex., is contractor for Mae Belcher 1 E. B. Smyth, W. F. Chapman Survey, a wildcat in McLennan County, Texas, in the general vicinity of the Smackover lime play in East Texas.

TRINITY Drillers, Inc., San Antonio, Tex., received contract for a 9,000-ft. wildcat from Standard Oil Co. of Texas and Shell Oil Co., Inc. The well is 1 Fredericks, located in Cameron County, Texas, in Block 1, San Benito Land & Water subdivision, Concepcion de Carrictas grant.

JACK FRAZIER, Houston, Tex., is drilling below 9,000 ft. in his 2 Carroll Wood, a deep test located in the Dyersdale field, Harris County, Texas. The regular pay in the field is around 4,000 ft.

KIRKWOOD & MORGAN, Laredo, Tex., are moving a rotary to McMullen County, Texas, for Harold K. Boysen 1 Hagist, a projected 4,200-ft. wildcat located north of the town of Freer in Survey 9, H.&T.C. Survey.

FAIN Drilling Co., Houston, Tex., is moving a rotary to San Jacinto County, Texas, for 1 Baldwin estate, a Wilcox test located about 4 miles west of the Mercy field. Location is in the S. Arnold Survey, and the well will be drilled jointly with Clark & Cowden.

THE MOST active area in the Texas Gulf Coast district is Jackson County, with some 30 rigs reported to be running. Eight of the operations are wildcats while the remainder are located in proven fields, the majority being centered in an area of about 12 miles southeast and southwest of the town of Ganado in the West Mauritz, Harmon, Mayo and Stewart fields. All of these fields are in the early stages of development and all work is being done by Gulf Coast contractors. Contractors operating in the area include Harry L. Edwards Drilling Co., Mac Drilling Co., Houston Drilling Co., Petroleum Well Service Co., Johnny Ferguson and Roxie Wright.

BREWSTER-BARTLE Drilling Co., Houston, Tex., has started drilling operations on a second test in the South Aldine area, Harris County, Texas, for George W. Strake. In the meantime, testing continues in the North Bay City area, Matagorda County, Texas, where a new pool has been opened with Ohio 1 McDonald, which is testing at 7,800 ft.

AMERICAN Drilling Co. has the contract to drill Talbot Oil Co. 1 Leonard Schaub, in C S½ NE SE 28-15n-4e, Bay County, Michigan.

ROWAN Drilling Co., Houston, Tex., is expected to start another

Crew of Kerlyn Oil Co., at Wewoka, Okla. The men are Cliff Shores, Louis Bess, G. W. Wade, Dewitt Darrow, E. L. Harner, Charles Crosell, E. R. Taylor, Phil Campbell, Chris Lambert, and Elmer Pinfont

Contractors

operation on the Danbury dome, Brazoria County, Texas,. following the completion of the company's 18 Jamesion, completed for an excellent producer in the 5,600-ft. sand.

CROW & GRACEY, Houston, Tex., received contract from Hebert & Smith for 1 G. W. Conger, a projected 7,800-ft. wildcat to be drilled in the John Blair Survey, Liberty County, Texas, near the Jefferson County line.

LUPHER Drilling Co. will drill Peter J. Bolger 1 Frank A. Smith, in C N½ SW SW 29-19n-11, Lake County, Michigan. Lupher will also drill E. L. Bennight 1 J. Howe, in S½ NW NE 20-18n-10w, Osceola County, Michigan.

GOLL, GRAVES & MECHLING, Inc., has the contract to drill Basin Oil Co. 2 Porter (Comm.), in C S½ NE SE 2-14n-4e, Bay County, Michigan.

OLSON Drilling Co., Tulsa, has been awarded contract to drill Gulf Oil Corp. 1 Harold Kraybill, in SE NE NE 34-6n-15e, north of Auburn, in Nemaha County, southeastern Forest City basin region, Nebraska. It is on a block of approximately 10,000 acres the firm assembled in 1940.

CROW Drilling Co. will drill a wildcat to a depth of 6,000 ft., if necessary, near Mira, 5 miles southeast of Rodessa, La. The well is located in 27-23n-13w, De Soto Parish Louisiana.

LONGHORN Drilling Co., Three Rivers, Tex., has been awarded contract by Superior Oil Co. of Oklahoma, for development of the Poth field in Wilson County, Texas, 5 miles northeast of the town of Poth.

The discovery well in this field was drilled as the Holland Oil Co. 1 Charles Boysen. Derrick was going up for the first new test to be on the E. B. Chandler land in the David J. Holt Survey, about 1,000 ft. southwest of the discovery well.

THE APPALACHIAN Drilling Contractors Association has announced the posting of a reward of $100 for information leading to the arrest and conviction of any person or persons stealing drilling equipment from any members of the association. Signs have been posted on all members' rigs to this effect. The need for such a measure is more pronounced due to the restrictions in securing new equipment as a result of the war.

ROGERS Brothers Co. 1 J. Schenck, a deep test in S. Dunham Survey, Block 24, Abstract 196, in the Saint Jo area of Montague County, Texas, is shut down for repairs after drilling 3 ft. of granite wash picked up at 3,428 ft. The same company's 1 Grimes, in the L. Raney Survey, Abstract 630, is waiting on cement after setting 7-in. at 3,552 ft., and will test saturated zone of the granite wash from 3,514-39 ft.

Acme Map Co., Tyler, Tex.

One of two new pools in East Texas is the Club Lake (Weiland) pool of Hunt County, shown here, where an active drilling campaign has been under way for several weeks. Only four producers have been completed, however, and several dry holes have been drilled. Discovery well (1 Baker) was drilled by R. L. Peveto et al

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Personal Paragraphs

RALPH G. McDIARMID has been promoted from chemist at Shell Oil Co., Inc.'s Shellburn refinery to assistant superintendent of the same plant located in British Columbia.

JOHN A. McCUTCHIN, British American Oil Producing Co., Oklahoma City, Okla., has been elected chairman of the Mid-Continent section of the American Institute of Mining and Metallurgical Engineers, succeeding HERB F. BEARDMORE, of Amerada Petroleum Corp.

EUGENE S. MARTIN has been employed by Shell Oil Co., Inc., as junior technologist at the firm's refinery at Wilmington, Del.

EDWARD R. HUDSON, Fort Worth, Tex., oil man and attorney, is recovering from an emergency appendectomy at a Fort Worth hospital.

CURTIS DAWES, son of HENRY M. DAWES, president, Pure Oil Co., who has been a lieutenant, senior grade, in the Navy, has been promoted to a lieutenant commander.

M. C. VAN GUNDY, formerly chief chemist for Texas Co., at Port Arthur, Tex., is now associated with the Maintenance Engineering Co. at Houston, Tex., as sales engineer.

T. S. MAFFIT, JR., safety manager of Houston Pipe Line Co., Houston, Tex., has been commissioned a first lieutenant in the Army Air Force and has reported for duty.

WILLIAM A. SHOEMAKER, Bradford, Pa., has been named one of the board of directors of the New York State Oil Producers Association. GEORGE W. HOLBROOK, of Wellsville, N. Y., was elected president of the group.

EDUARDO SIMIAN G., who has been a trainee with Carter Oil Co. for the past year, is returning to his native country, Chile, to take a position with the Departmento de Minas y Petroleo, Ministero de Fomento, as geologist.

T. P. DUNCAN, JR., of the oil-production group of Duncan, Arnhold & Duncan, Wichita Falls, Tex., has been commissioned a first lieutenant in the Army Air Forces, and will shortly leave for training at Miami Beach, Fla.

HARRY MEE and WALTER McCLELLAND, geologists at Oklahoma City, Okla., have been commissioned captains in the Air Corps, and left last week for training school at Miami Beach, Fla.

EDWARD E. ROTHMAN, of the Ethyl Corp., has been commissioned a captain in the Army Air Corps and has been sent to Wright Field, Dayton, Ohio. Mr. Rothman has been with Ethyl at Detroit since 1939, handling technical and agricultural advertising programs.

HOMER LAUGHLIN, Southern California Gas Co., and DEKE HOULGATE, American Gas Association, are now first lieutenants in the Army Air Corps, and HARRISON MUSGRAVE, Southern Counties Gas Co., is a captain. M. J. BINCKLEY, Southern California Gas Co., has been promoted to lieutenant colonel. FRED DIETRICH, Pacific Gas & Electric Co., is a lieutenant commander in the Navy. LOUIS MEIER is now with Southern Pacific Co. at its San Francisco shops. HENRY HARRIS is leaving Southern California Gas Co. to become superintendent of the gas and water departments of the Union Light, Heat & Power Co., Covington, Ky.

J. MARK GARDNER, formerly drilling superintendent for Phillips Petroleum Co., Bartlesville, Okla., is now a lieutenant in the U. S. Army, stationed at Camp Leonard Wood, Missouri. CLINT MOORE, formerly district superintendent for Phillips at Shreveport, La., has been commissioned in the U. S. Navy as a lieutenant junior grade. JOHN F. PATTERSON, formerly division superintendent at League City, Tex., is a second lieutenant at Camp Claiborne, Louisiana. BUREN T. MURPHEE, pool engineer at Oklahoma City, Okla., is now an ensign at Harvard Naval Training School, Cambridge, Mass.

Do You Remember?

From The Oil and Gas Journal Files

40 YEARS AGO

The Hogg-Swayne Syndicate is reported to have closed a deal whereby its interests on Spindletop are amalgamated with the properties of the Texas Oil Fields Co., Ltd., an English concern, the consideration being $2,500,000.

The Southern Pacific Railroad is installing oil burners on its locomotives throughout the entire Atlantic system. Already the daily consumption is about 2,200 bbl. and when the conversion is complete, the total will reach 10,000 bbl. of oil a day.

25 YEARS AGO

Conditions in the Baku oil field of Russia continue to be very unsatisfactory. Business is affected by the war and by internal disturbances.

At El Dorado, Kans., the Midland Refining Co. has opened its new plant and the daily output is about 1,000 bbl. Later the refinery's output will be increased.

Pat Hurley, of Tulsa, will be named a major in the Judge Advocate General's Department, which is the law branch of the Army. For some years he was a member of the Oklahoma National Guard as a commissioned officer. Until recently he was national attorney for the Choctaw Indians.

15 YEARS AGO

The Standard Oil Co. of New Jersey has closed negotiations with the German dye trust for the purchase of the American rights to patents on the Bergius process for extracting oil from coal. President Teagle, now in Germany, notified the New York office of the conclusion of the deal.

Mexico's oil production is now running at the rate of about 180,000 bbl. daily, just about equaling Venezuela's rising production. Venezuela will, either this year or next, pass Mexico, unless some unforeseen condition arises.

The University of Pittsburgh is the only school at the present time which has established a separate department that offers a full course in refinery engineering, and that grants a degree.

A. A. HOLSTON, of the geological department of Stanolind Oil & Gas Co., at Jackson, Mich., is now in the Tulsa office.

K. KENNETH LANCASTER, who was assistant district geologist at Tulsa for Tide Water Associated Oil Co., is now district geologist at Shreveport, La.

JOHN BASS, chief accountant for Continental Oil Co., Ponca City, Okla., is back on the job after being confined several weeks by a broken leg. He is still walking on crutches.

J. F. GIBBON, secretary-treasurer of Tex-Harvey Oil Co., Dallas, Tex., will direct the company's activities during the absence of ARTHUR HARVEY, president, who is a captain in the U. S. Army Air Corps.

J. EARLE BROWN, consulting geologist of Fort Worth, Tex., has left for Fort George Wright, Spokane, Wash., to assume duties as a major in the Army Air Forces. Mr. Brown has been engaged in oil production in South Texas, in addition to his consulting practice.

W. F. NENNEY, Tyler, Tex., independent operator, has been elected post commander of Favre Baldwin Post No. 12 of the American Legion at Tyler. He will succeed BRYAN W. PAYNE, president of the East Texas Salt Water Disposal Co. and of the Iowa Payne Oil Co.

HARRY B. HARTER has resigned as president of Tejos Royalty Co., Tyler, Tex., and has been commissioned as captain in the Army Air Corps. He will report for active duty August 18 at a special training school at Harrisburg, Pa. His successor as president and general manager of Tejos Royalty Co. is PHILLIP GOLTERNEK, of Tyler, Tex.

W. M. CHERNEY, of San Francisco, Calif., has arrived in Edmonton, Alta., to supervise drilling operations for Shell Exploration Co.

LEDGER SMITH, production superintendent for Standard Oil Co. of Texas, has been transferred from Kermit, Tex., to Graham, Tex., where he will be in charge of a new district which the company has recently entered in Young County.

CARLTON D. SPEED, JR., owner of Speed Oil Co., with headquarters in Houston, Tex., will leave this week for Washington, D. C., where he has been summoned for duty as a petroleum technologist in the OPC. Mr. Speed is president of the Houston Geological Society.

J. K. COATS has been transferred to the Fort Worth, Tex., office of Stanolind Oil & Gas Co. as assistant division clerk, succeeding R. E. GRAHAM, who is taking a CPI course to qualify as a flight instructor in the Air Corps. Mr. Coats was formerly a field clerk at Pampa, Tex.

L. L. DePEW, district pipe-line foreman for Lone Star Gas Co., has been elected president of the Shamrock, (Tex.) Rotary Club. He has been a Rotarian for several years, and is active in community affairs. He is also commander of the Charles De Shazo post of the American Legion.

LUTHER O. SMITH has taken over personal direction at the Bayonne, N. J., plant of Tide Water Associated Oil Co. Mr. Smith joined Tide Water in 1922, and up until his recent transfer to Bayonne, he has been engaged in the construction and supervision of gas and process plants and pipe lines.

JERALD H. BARTLEY, geologist at Midland, Tex., with University Lands, has received an appointment as an ensign in the Navy, and has reported for service at Boston, Mass. JAMES NORMAN, geologist in Midland with Forest Development Corp. since July 1941, also has been appointed an ensign, and is awaiting orders to report to training camp. He will be trained in naval and aerial photography.

Heads Geophysicists

Dave P. Carlton, head of the geophysical department of Humble Oil & Refining Co., Houston, Tex., was born September 23, 1890, at Shalersville, Ohio. After graduating from high school in 1909, he entered Leland Stanford University, at Palo Alto, Calif., where he graduated with an A.B. degree in geology in 1915.

DAVE P. CARLTON

Mr. Carlton's first contact with the oil industry was in 1915 when he combined his knowledge of geology with roughnecking and roustabout work in the Coyote Hills field for the Standard Oil Co. of California. He resigned in 1916 to become mining geologist for the Nevada-Douglas Consolidated Copper Co., and this work took him through New Mexico and western Nevada. When World War 1 began Mr. Carlton enlisted in Company A of the Twenty-seventh Engineers. His regiment was sent to France on a special assignment in February 1918. He returned to the United States in April 1919.

Mr. Carlton became associated with the Humble company on May 15, 1919, when he joined the company as geologist, working under Wallace E. Pratt during the boom days of the Ranger-Cisco activity. In 1922 he was transferred to the company's office as geologist in connection with tax evaluation matters.

When geophysics was brought into use in the Gulf Coast in 1924, Mr. Carlton was given the responsibility of organizing a geophysical department. The successful operation of this department is reflected in the enormous reserves that have been built up by the company in the Gulf Coast area through various methods of geophysical exploration.

Mr. Carlton is a member of the American Association of Petroleum Geologists, American Society of Mechanical Engineers, and the Society of Exploration Geophysicists. He is also a member of the River Oaks Country Club. He is married and he and his wife reside in Houston. Mr. Carlton has two special hobbies. One is making furniture in his fully equipped work shop and the other is listening to good music.

LT. ELMER H. EPPERSON, Union Oil Co., recently bombed and destroyed a Nazi submarine.

GEORGE A. PETERKIN, vice president, Latex Construction Co., who was recently appointed division superintendent of War Emergency Pipelines, Inc., was called to active service with the Army Air Corps just as he was entering on his duties connected with the laying of the 24-in. Texas-Illinois line.

W. W. CLAWSON and FRED JOEKEL, geologists with Magnolia Petroleum Co. at Dallas, Tex., have left for a vacation trip in Colorado. Also bound for Colorado vacation is ALBERT E. OLDHAM, geologist with the American Liberty Oil Co. at Dallas, and MALCOLM E. WILSON, vice president of the General American Oil Co. of Dallas.

WILLIAM LIVINGSTONE MUNCY, director of sales personnel, Standard Oil Co. of California, San Francisco, Calif., has been made director of the petroleum section, transportation service, service of supply, Army Specialist Corps, with the rank of lieutenant colonel. He has been associated with Standard Oil Co. of California since 1906.

JOHN E. SKEHAN, vice president and director of Standard Oil Co. of New Jersey, recently completed 40 years of service with the company. In recognition of the event, he was presented with a platinum chime watch, chain and knife on behalf of his friends in the company and with a parchment scroll signed by hundreds of the company employes. Mr. Skehan went to work for Standard Oil on July 10, 1902.

JAMES R. SLOANE, of New York City, was made chief of the raw materials section in the division of storage, Office of Defense Transportation, Washington, D. C. The new section is designed to cooperate with all government agencies on matters concerning the storage of liquids and other raw materials. Mr. Sloane, who has been associated with the petroleum industry for more than 20 years, formerly was vice president and general manager of Oil Trading Co., Inc., of New York.

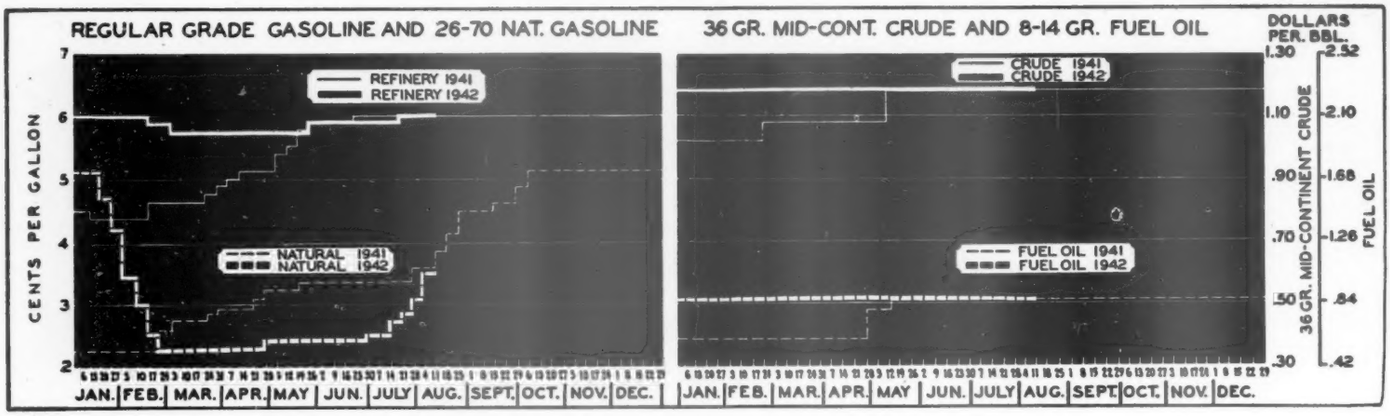
FRENCH M. ROBERTSON, oil operator and former county attorney of Haskell County, Texas, has been commissioned a captain in the Army Air Force, and has gone to Miami Beach, Fla., for temporary duty, after which he will be assigned to active duty at the Mobile Air Depot, with the Air Service Command.

MARTIN NEILSEN, for the past several years refinery superintendent for Gas & Oil Products, Ltd., in Turner Valley, Canada, has been appointed plant superintendent for Abasand Oils, Ltd., with headquarters at Fort McMurray, Alberta. Mr. Neilsen will be in immediate charge of the company's production from the Athabaska oil sands, including mining, extraction of the oil, and refining. Mr. Neilsen's technical and engineering education was obtained in Denmark and Norway, and he has been in the oil business in Canada since 1930.

Shifts: E. J. HEAD, engineer, Gulf Oil Corp., Three Rivers to Bowie, Tex.; M. STEVENSON, superintendent, Cosmo Oil Co., Catlettsburg, Ky., to Wynnewood, Okla.; L. R. HALEY, engineer, Texas Co., Houma to Golden Meadow, La.; L. E. WRIGHT, engineer, Amerada Petroleum Corp., Brownfield to Levelland, Tex.; C. L. WHIGHAM, superintendent, GEORGE P. LIVERMORE, Odessa to Seagraves, Tex.; A. M. SCHAIBLE, engineer, Gulf Oil Corp., Fairview, Kans., to Port Arthur, Tex.; WALLACE G. PALMER, engineer, Deep Oil Development Co., Houston to Wichita Falls, Tex.; H. A. FARLEY, president, Pawnee Oil Production Co., Tulsa to Durant, Okla.

RICHARD T. ROBINSON, electrical superintendent of Bahrein Oil Co., recently left Los Angeles, Calif., by airplane for New York from which point he will return to his post on Bahrein Island after a 3-month vacation spent for the most part in California.

JOHN W. HERBERT, vice president and general manager of Herbert Oil Corp., Fort Worth, Tex., and president of the Falcon Co., also of Fort Worth, has left continental United States for duty as a captain in the Combat Intelligence Division of the U. S. Army Air Corps. He was commissioned April 19 and was given 6 weeks of training at Harrisburg, Pa., and 2 more weeks at Washington, D. C. His duties as an oil man have been taken over by his wife.



MARKET DEVELOPMENTS . . .

East Coast

NEW YORK.—Price reductions ranging from 2.5 cents per gallon on gasoline to 15 cents per barrel on Bunker C fuel oil were put into effect on the East Coast last week as OPA rescinded a large part of the advances that had been made previously to offset higher transportation costs. The advances were rescinded as RFC announced a subsidy plan, retroactive to August 1, had been approved to replace the price advances as a means of offsetting the higher costs.

Reductions ranged from one-third of the previous advances on residual fuel oil to two-thirds of the earlier advances on gasoline. Price changes and their effect on representative products follow: Gasoline, 72-74 octane, 2.5 cents, from 11.7 to 9.2 cents per gallon; kerosene, 0.9 cent, from 7.7 cents to 6.8 cents per gallon; No. 2 fuel oil, 1.1 cents, from 7.8 cents to 6.7 cents per gallon, and Bunker C fuel oil, 15 cents per barrel, from $1.80 to $1.65. Previously allowed advances on gasoline aggregated 3.7 cents; kerosene, 2.4 cents; No. 2 fuel oil, 2.6 cents per gallon, and No. 6 fuel oil, 45 cents per barrel.

Complete cessation of heating-oil sales has been accompanied by an increase in stocks in District 1, but the increase still is too small to warrant optimism. It is becoming increasingly obvious that either increased tanker shipments or further gasoline reductions are imperative. Because of the uncertainty that surrounds military and naval tanker requirements, it is believed that more drastic curtailment of gasoline will be sought through reduction in ration coupon values.

Mid-Continent

THE growing strength of Mid-Continent refinery markets is bringing additional advances in prices in nearly all products except lubricating oils and waxes. Sharpest gains are being made in natural gasolines, which are extremely tight. Refinery gasolines, kerosenes, furnace oils and gas oils are up fractionally on the low side.

Very little natural gasoline is available for tank-car and spot movement. Much of the material has been sold for shipment with crude oil in pipe lines to the East, and with the increased demand by coastal refiners whose yields of low-octane gasolines have been boosted in the production of war products, current supplies are being kept drained.

Mid-Continent refiners also are being hard pressed to fill commitments of refinery gasolines, and several are actively on the buying side of the market to meet their needs. Inquiries from buyers continue to pour in but generally are going unsatisfied. Few suppliers have any material at all for the open market. The situation is becoming more firmly entrenched in the sellers' hands.

SENTENCE SUMMARIES

MID-CONTINENT: Natural gasolines tight with growing demand and short supplies. Refinery gasolines, burning oils and light fuels up fractionally. Market generally strong.

GULF COAST: Prices generally unchanged. Demand for kerosenes, gas oils and light fuels strong but sales limited due to lack of transportation. Gasolines unsettled.

EAST COAST: Prices for gasolines, kerosenes, burning oils and fuels reduced as OPA rescinds large part of previous advances. All products strong.

PENNSYLVANIA: Demand for gasoline and fuels active and prices firm. Lubricating oils generally steady.

PACIFIC COAST: Firmer tone in refinery gasolines. Supplies of natural gasolines short. Prices unchanged.

Gasoline sales in the interior are reported holding up despite the tire situation, which has been a factor in the continued demand for material.

Burning oils and light fuels also are being held strongly with no sign of any early falling off.

In view of the strong demand, refiners are attempting to adjust and enlarge their supplies not only by purchases but by exchanges and borrowings so that commitments can be filled to the best advantage. Shortage of tank cars is proving a particular handicap with sales in many cases being contingent upon the ability of the buyer or seller to provide tank cars.

A.P.I. REFINERY REPORT

Week Ended August 1, 1942

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks Gasoline	Residual	Gas oil
Appalachian	152	2,624	582	593
Ind., Ill., Ky.	742	15,250	3,547	4,660
Okla., Kans., Mo.	365	7,381	1,386	1,476
Censored group*	1,660	38,442	17,720	18,506
Rockies	92	2,151	550	408
California	661	15,476	54,598	11,987
Total Aug. 1, 1942	3,672	81,324	78,383	37,530
Total July 25, 1942	3,658	82,281	77,816	35,966
Total Aug. 2, 1941	3,868	84,668	92,197	43,307

Note: Refinery runs and stocks for week ended August 8, 1942, appear on Trends page.

*Reports combined on East Coast, Gulf Coast, Louisiana-Arkansas and Inland Texas at request of OPC.

CRUDE-OIL STOCKS

(Bureau of Mines estimate)

Week ended:	Bbl. of crude*
August 1, 1942	248,336,000
July 25, 1942	249,262,000
August 2, 1941	252,535,000

*Excludes heavy, unrefinable stocks in California.

Gulf Coast

HOUSTON, Tex.—No sales of importance were reported in the Gulf Coast refinery market this week and the situation continues unsettled. Kerosene, gas oils and fuels remain in good demand but movement is limited due to lack of transportation facilities which continues to govern market developments. Some lend-lease material is being moved and it is possible that movement has been increased during the past few weeks as stocks of petroleum products at many of the refineries have been lowered. With additional tank cars being moved from the Gulf Coast to points farther inland to steady declining stocks on the East Coast, the transportation problem on the Gulf Coast is expected to become more acute within the next few weeks.

The Gulf Coast Refiners Association continues to show an improvement in stocks of refined products. In its report of inventories for the last half of July gasoline stocks were 2,698,484 bbl., a decrease of 208,281 bbl. since July 15. Total stocks of all petroleum products were 5,931,471 bbl., a reduction of 46,688 bbl. during the same period. Crude runs to stills of the 14 member companies totaled 1,200,800 bbl. This is at the rate of 75,238 bbl. a day, or 44.3 per cent of the total rated capacity of 170,000 bbl. This is a gain of 2.7 per cent in operations since July 15.

So far the reductions in East Coast prices occasioned by the rescinding by OPA of advances authorized last January have not been reflected on the Gulf Coast, and market observers now are of the opinion there probably will be no important changes. On the other hand, it is anticipated that the adoption of the plan to subsidize increases in transportation costs may strengthen the market.

Pacific Coast

LOS ANGELES, Calif.—Reflecting the improvement in demand, a slightly firmer tone was displayed in refinery gasolines. Prices remained unchanged.

Natural gasolines are not available for the spot market. Recent curtailment of output has so lessened the supply that sellers are finding no surplus contract outlets. Some are having increasing difficulty taking care of requirements.

Demand for fuel oil continues in excess of supply, forcing steady reductions in stocks. All sales are taking ceiling prices. Gas oils are holding firmly with sellers releasing only small supplies. Sellers generally are trying to keep stocks pending expected greater seasonal demand.

Greater stability is becoming evident in lubricating oil and all prices are firm.

REFINERY AND TANK-WAGON PRICES

(Prices as of August 11)

Refinery Gasoline

Octane (A.S.T.M.):	†80	78	74-76	72-74	68-70	63-66	60 & lower
Mid-Continent*	.....	.....	.....	5.875-6.000	.....	5.500-5.625	5.125-5.250
Pennsylvania	.....	.....	6.750-7.000	.....	.....	.....	.....
Gulf Coast‡	6.00-6.50	.....	.....	§5.750-6.250	§5.750-6.250	§5.250-5.750	§5.000-5.500
Northeast Coast	12.200	.....	.....	9.2	9.2	.....	.....
Pacific Coast	.....	6.750-7.000	6.500-6.750	6.375-6.500	6.000-6.375	5.500-5.750	5.000-5.125

*Basis Group 3. †1939 C.F.R. (research method). ‡Integrated companies restricted to lowest prices. §Unleaded.

Quotations are f.o.b. plant in cars and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

Natural Gasoline

Grades:	26-70	18-55	75-85(350-375)
Oklahoma (Group 3)	3.500	3.875	.....
North Texas	3.125	3.375	.....
North Louisiana	3.250	3.500	.....
California	.....	.....	5.000-5.500

Kerosene and No. 1 Fuel Oil

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*	.....	.....	4.625-4.750	4.500-4.625	.....
North Louisiana	.....	.....	.....	4.500-4.750	.....
Pennsylvania	6.250-6.625	6.125-6.250	.....	.....	.....
California	.....	.....	.....	4.500-5.500	4.250
Northeast Coast	.....	.....	.....	6.000	.....
Gulf Coast	.....	.....	.....	3.875	.....

*Basis Oklahoma Group 3.

Tractor, Diesel, and Bunker Fuel Oil

Specifications:	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Bunker C
Mid-Continent*	4.125	.....	.....	.....	.....	.....
California	.....	2.750-4.000	.....	.....	‡$1.35-1.45	$0.85-0.90
Gulf Coast	.....	.....	4.000	4.125	1.45	0.85
Northeast Coast	.....	.....	.....	7.800	2.222	1.65
North Louisiana.	.....	.....	.....	.....	.....	†0.80-0.85

*Basis Oklahoma Group 3. †10-14° gravity. ‡Pacific Specification 200.

Furnace Oil, Gas Oil, Fuel Oil

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.625-3.750	3.500-3.625	$0.85	$0.85
Pennsylvania (West)	5.875-6.125	5.875-6.000	†5.250-5.500	.....
Northeast Coast	6.7	7.8	1.85	$0.80
Pacific Coast	5.5	5.5	†0.80-95	$0.80
Gulf Coast	3.875-4.0	.....	1.65	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel oil. ‡Pacific Specification 300. §Pacific Specification 400.

Lubricating Oils

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.00
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	17.50

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-3	15.00
300-3	18.00
500-3	19.50
600-3	20.00

Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.

Wax

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	4.350-4.550
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250

Neutral Oil

CALIFORNIA		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color. 460-405 flash:		
Zero pour point		38.50
10 pour point		37.50
15 pour point		36.50
25 pour point		31.00
200 vis., at 70° F., 3 color:		
Zero pour point		40.50
10 pour point		39.50
15 pour point		38.50
25 pour point		33.00
NEW YORK—		
Wax in bags fully refined:		
130-132 (A.m.p.) wax		6.250
133-135 (A.m.p.) wax		6.550
Crude scale:		
124-126 (A.m.p.) w.s.		4.350-4.455
124-126 (A.m.p.) y.s.		4.350-4.455

EXPORT PRICES

Gasoline—60-62° Gravity, Maximum 400 End Point

Octane:	72-74	68-70	65-66	60
Gulf Coast	6.500	6.250-6.500	5.875	5.625
Pacific Coast	.....	6.125-6.500	5.875-6.000	5.500-5.625

Distillate and Fuel Oil

	Kerosene	Diesel fuel—			Bunker
	41-43	24 G.	48-52 D.I.	58 D.I. Bunkers	C grade
Gulf Coast	4.000-4.250	.....	4.125-4.375	4.375 $1.65-80	$0.85-95
Pacific Coast	4.750-5.000	1.25-30	.....	†1.35-45	*0.80-90

*Pacific Specification 400. †Pacific Specification 200.

Lubricating Oils

	Neutral oils—		Bright and cylinder stocks—		
	200-3	150-3	200-3	150-3	600&630 S.R
Mid-Continent	16.8	.....	28.8	24.8	.....
Pennsylvania	43-50	41-46	36-37	36-37	26.5-27

GASOLINE AND KEROSENE TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Baltimore, Md.	15.05	5.50	10.20
Boston, Mass.	14.50	4.50	9.50
Burlington, Vt.	16.50	5.50	.....
Buffalo, N. Y.	15.80	5.50	10.30
Dover, Del.	16.30	5.50	11.90
Hartford, Conn.	15.20	4.50	.....
Manchester, N. H.	16.90	5.50	10.50
Newark, N. J.	14.30	4.50	9.40
New York, N. Y.	15.70	5.50	9.50
Philadelphia, Pa.	15.80	5.50	11.60
Pittsburgh, Pa.	16.30	5.50	12.00
Portland, Me.	15.90	5.50	9.60
Providence, R. I.	14.60	4.50	9.30
Washington, D. C.	14.30	3.50	10.70
Average 14 cities	15.51	5.07	8.89

(All prices undivided dealer basis.)

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Chicago, Ill.	13.40	4.50	10.30
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	14.40	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	15.15	5.57	9.61

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky, and Louisiana)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Atlanta, Ga.	19.00	7.50	10.50
Birmingham, Ala.	23.10	8.50	11.00
Charleston, S. C.	18.95	7.50	.....
Charleston, W. Va.	19.25	7.50	13.00
Charlotte, N. C.	20.10	7.50	11.00
Jacksonville, Fla.	21.50	8.50	10.40
Jackson, Miss.	18.00	7.50	8.50
Louisville, Ky.	17.00	6.50	8.50
Memphis, Tenn.	17.75	8.50	10.50
New Orleans, La.	17.25	8.50	*10.00
Norfolk, Va.	19.45	6.50	12.60
Average 11 cities	19.21	7.59	9.66

*Includes 1-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.50
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST

(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.50
Average 3 cities	16.17	5.83	12.83
Average 50 cities	17.47	5.96	11.02
Average last week	17.47	5.96	11.02

Canadian Fields

(Continued from Page 85)

northern British Columbia. The survey in progress is preliminary to commercial development, following the transfer of the oil resources of this area from the British Columbia government to the federal government for the duration of the war. Dr. Hume's inspection will extend to drilling and survey activities in adjacent areas, including the Pouce Coupe district of northern Alberta where Bonanza Royalties 1, LSD 16. 22-80-13w6, is preparing to resume from 2,129 ft.

ONTARIO COMPLETIONS

Binbrook Township: Dominion Natural Gas 2 Barry, Lot 32, Concession 8, T.D. around 465 ft., 21,000 cu. ft.

Dominion Natural Gas, Lot 33-9, T.D. 470 ft., 40,000 cu. ft.

Caistor Township: Grimsby Natural Gas Co., Lot 4-2, dry, T.D. 485 ft.

Canboro Township: Lincoln Gas Co., Lot 5-1, T.D. 545 ft., 20,000 cu. ft.

Lake Erie: Dominion Natural Gas 18, opposite Lot 189, T.R., Romney, T.D. 1,315 ft., 130,000 cu. ft.

Oneida Township: Port-Colborne-Welland Gas Co., Lot 29-4, dry.

Seneca Township: L. B. Mehlenbacker, Lot 8-3, T.D. 540 ft., dry.

South Cayuga Township: Dorset Gas Syndicate, Lot 13-2, T.D. 885 ft., 26,000 cu. ft.

Tuscarora Township: Petrol Oil & Gas 107, Lot 25-4, T.D. 620 ft., dry.

Ajax Oil & Gas 68, Lot 18-4, T.D. 625 ft., dry.

Walpole Township: Dominion Natural Gas, Lot 4-10, T.D. 920 ft., dry.

Till Gas Co., Lot 18-8, T.D. 910 ft., dry.

Dominion Natural Gas, Lot 12-11, T.D. 915 ft., 40,000 cu. ft.

Dominion Natural Gas, Lot 12-10, T.D. 880 ft., dry.

CRUDE-OIL PRICES

Effective August 1, 1942, Stanolind Oil Purchasing Co. posted a price of $1.15 for crude purchased in the Eureka Heights field, Harris County, Texas.

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Smackover, Arkansas, heavy	.83
Illinois basin	1.37
Pecos County, Texas	.95
Lance Creek, Wyoming	1.12
Bradford, Pennsylvania	3.00

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast, Texas	West Texas*
18-18.9	$0.80	.....	.....	.....
19-19.9	.84	.....	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	.....	1.07	1.30	.94
32-32.9	.....	1.09	1.32	.96
33-33.9	.....	1.11	1.34	.98
34-34.9	.....	1.13	1.36	1.00
35-35.9	.....	1.15	1.38	1.02
36-36.9	.....	1.17	1.40	1.04
37-37.9	.....	1.19	1.42	1.06
38-38.9	.....	1.21	1.44	1.08
39-39.9	.....	1.23	1.46	1.10
40 and above	.....	1.25	1.48	1.12

*Includes Lea County, New Mexico.

The cause and prevention of bent and out-of-line drilling rig shafts

Information supplied by "Oil and Gas Journal"

Any misalignment in drilling rig bearings, or kinks in the shaft, is evidenced by noise in the rig and excessive vibration. Continued operation with a bent or kinked shaft will cause undue sprocket or sheave wear and premature failure of the chains or "V" belts.

A kinked or misaligned drum shaft causes brake bands to wear unevenly and uneven spooling of the wire line, with severe wear necessitating premature replacement.

A reasonable amount of care will avoid all these troubles. Jamming down the brake lever while running heavily loaded should be avoided, as well as running into the load. Engaging the clutch while the drill pipe is being lowered into the hole is also bad practice, comparable to slamming a car into reverse at high speed.

If a shaft does become kinked it should be repaired immediately if possible, or at least as soon as the well is finished. It may take a lot of work, but it is the only way to make sure that the rig will stay in operation.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.
MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Molybdenum Company
500 Fifth Avenue, New York City

MOLY

EQUIPMENT PROGRESS...

New Triplex Hooks Made In Three Sizes

Byron Jackson Co., Los Angeles, Calif., announces that BJ Triplex hooks are now made in three new sizes: A 60-ton size for use with portable drilling rigs; a 125-ton size for wells of average depth, and a 200-ton size for use on all except extremely deep wells.

Direct-connected to block.

(Left) With "Triplex" Body

With "Duplex" Body

Many important improvements in design and construction are apparent in these hooks. The standard Triplex (three-hook) body can readily be replaced with the Duplex (two-hook) body by removing only the shank pin. Ears on the upper housing permit direct connection to some traveling blocks; others require the adapter illustrated.

A unique double bearing consists of a small ball bearing which is never subjected to a load greater than that imposed by the enclosed relief spring. This smaller bearing permits effortless swiveling of the hook when spinning in pipe. A larger bearing assumes any load beyond the capacity of the relief spring, and this bearing is of ample size and strength to carry the recommended drilling load for each size hook.

A swivel lock of new design provides eight positions for locking the hook to present rotation while drilling. This swivel lock is operated by a roller on a cam, actuated by a low-stressed torsion spring, and is both positive and trouble-free in service.

TRADE LITERATURE

BLACKMER PUMP CO., Grand Rapids, Mich.—A new general catalog which gives, in a comprehensive manner, the background of this line of pumps and presents data concerning their applications which have never before been issued. The catalog contains 24 pages and a cover, and is copiously illustrated.

REED VALVE DIVISION, REED ROLLER BIT CO., Houston, Tex.—Two-color folder on Reed valves, with phantom cutaway view of valve mechanism with descriptive captions.

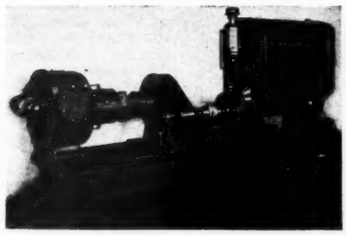
BLACKMER PUMP CO., Grand Rapids, Mich.—A comprehensive bulletin covering the line of "Ezy-Kleen" strainers. The text of the bulletin stresses the importance of protecting pumps, through the use of strainers in the intake lines, and illustrates with cross-sectional views and describes the operation of four types of strainers manufactured by the company. The features include heavier, more easily removable baskets, a completely steam-jacketed strainer for viscous liquids, a low-swing strainer with quick-detachable top, and a "T"-type unit with provision for side outlet so that it may replace a standard elbow in the suction line. Specifications show that the four types of strainers are available in a choice of three standard constructions: All iron, bronze-fitted and all bronze, and all strainers are rated in both gallons per minute and pipe size.

WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J.—Bulletin W-111-B31, on horizontal single-piston pumps, Type AC, with valve-plate pressures to 250 lb. per sq. in., for general services. Also Bulletin W-205-B5A, on Type CTH steam-jet ejectors, double-element, two-stage.

Viking Cargo Units Speed Loading of Tankers

Built to order, in many mounting styles and arrangements, the Viking cargo pumps in capacities of 45,000 and 63,000 g.p.h. are being used to speed up the loading and unloading of barges, tankers, storage tanks, etc., according to Viking Pump Co., Cedar Falls, Iowa.

Units of this type include the heavy-duty style Viking rotary pump complete with valve on head if desired, and connected to gasoline engine, diesel engine, or electric motor by means of totally enclosed back gearing ruggedly supported with end-thrust bearings and all mounted on rigid structural-steel reinforced base.



The unit illustrated shows the heavy-duty Viking with valve on head (enabling closing of discharge line without stopping pump); pump equipped with liquid-cooled stuffing box to enable long and continuous pumping service; thrust-bearing supported back gearing; connected to diesel engine by means of flexible coupling; and all mounted on structural steel base.

These pumps are self priming and strip tanks dry without additional equipment. Units of this type can be furnished under priority.

Eyeshield Protects Eyes From Scale and Harmful Glare

A new eyeshield, easily attached to any of the popular types of helmets, is designed to protect the welder's eyes during operation other than welding. It tends to eliminate reflected glare, affords wide vision, protects the eyes from flying scale from chipping hammer or wire brush. Loading of welding holder, setup work and other details may be accomplished without raising the visor. The shade is light green, fits the face comfortably, may be worn over prescription glasses. At ease, the welder can raise the protective visor—a quick flip downward and it resumes its protective position. It is made by Jackson Products, Detroit, Mich.

Cameron Iron Works Awarded Navy "E" Burgee

Cameron Iron Works, Inc., Houston, Tex., has been awarded the coveted All-Navy "E" burgee with White Star signifying continued outstanding production of naval ordnance. Formal presentation of the award was made July 19 by Rear Admiral P. W. Foote at a ceremony which also celebrated the dedication of Cameron's new Houston plant.

AMONG EQUIPMENT MEN

Staudt Named General Manager Of Dowell Inc.

John G. Staudt, formerly assistant manager of Dowell Inc., has been elected general manager of the company, replacing N. R. Crawford, who is now with Dow Chemical Co., the parent company of Dowell Inc. Mr. Crawford still holds his title of vice president and is a member of the board of directors of Dowell.

JOHN G. STAUDT

Mr. Staudt joined Dowell in 1932 at the time it was formed and has represented the company in many of its field offices, research department and since 1936 has been assistant manager with headquarters in the general office of the company, Tulsa.

Cummins Regional Office Enlarged

Formerly located in the Mid-Continent Building, Fort Worth, Tex., Cummins Engine Co. has taken larger quarters at 1812 Fair Building, where J. B. Chambers, regional manager, will be in a position to facilitate the handling of all sales and service matters through the distributors, Mid-Continent Supply Co. and the Cummins Diesel Sales & Service Co., Inc.

Mr. Chambers was appointed regional manager at Fort Worth in 1935. Affiliated with the Cummins company since 1925, he got his diesel training in various capacities at the Cummins factory.

It is felt that the enlarging of the regional office at Fort Worth will prove a big help in maintaining a closer relationship between the factory and the owner because it will enable the organization to keep in better touch with the buyer's needs and thus facilitate the adjustment of all matters pertaining to distribution.

Besselman Commissioned

W. H. Besselman, of General American Tank Storage Terminals, Chicago, has been called to active Army duty as first lieutenant in the Quartermaster Corp.

CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY . . .

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES ROYALTIES
PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years' Experience
Inquiries Invited
B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

U. S. OIL lands can be filed for oil lease developing area. Want several join filing block. Small expense. Box B-187, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: Oil and Gas leases on proven structures, drilling propositions, small production and fluorspar deposits. Reports furnished. W. P. Harley, Bowling Green, Ky.

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

FOR SALE: Gas properties, average annual gross revenue, past three years, approximately $10,000.00. For particulars address P. O. Box 388, Mannington, W. Va.

OPERATORS: 2800 acres Geologized, want drilled, will checker board or farm, bottom hole money. Box 232, Smith Center, Kans.

FOR SALE — FIVE YEAR OIL AND GAS LEASE (OKLAHOMA). GOOD DEAL. WRITE BOX 424, STILLWATER, OKLA.

FOR LEASE 160 Acres in Oil King Dist. Fresno Co. Near big development, registered dealers only. Wm. L. Crews, 200 Shaver St., San Rafael, Calif.

FOR SALE: 600 A. Lease Nowata County, Okla. Well equipped water plant, ample water supply, core reports, will sell at sacrifice or in royalty basis. Apply Leo H. Storms, Bradford, Penn., or W. R. Bowman, Kennedy Bldg., Tulsa, Okla.

FOR SALE: 80 acre lease in Kansas, lies between two adjoining water pressure flooding operations. The Oil and Gas Journal, Box B-222, Tulsa, Okla.

Ranches and Farm Lands

A GILT-EDGE VALUE in ranch, 2160 acres priced, $22.50 per acre, well improved, will carry 800 head of cattle and supply all necessary feed; ideal for hog raising; 1100 acres of blue stem, Lespedeza and Bermuda pasture second bottom; 400 acres first bottom in cultivation, part in alfalfa and corn; 700 acres in timber pasture; 30 acres of grafted paper shell pecan grove; 2 modern residences, barns, stock and tool shed; fenced and cross fenced; abundance of water; one hour's drive from Tulsa; may also be purchased with stock and equipment. Blair Realty Co., Tulsa, Okla.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

Financing

CAPITAL SEEKERS — Interested in raising $25,000 or more for a legitimate project should communicate with AMSTER LEONARD, Fox Theater Bldg., Detroit, Mich.

OUT OF 5000 American financial houses only 223 bought small issues last few years. The 223 names $4.00. JOHN F. MORRIS, Box 5411, Philadelphia.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

FOR SALE: 25 acres good Oklahoma Royalty, excellent possibilities, leased to major company. Box 618, Great Bend, Kansas.

ILLINOIS ROYALTY
Offset 77 acres to 500 barrel well, Hamilton County. Our option short, lease held by Major Co. A real buy at $100 per acre. S. J. Burkitt, Moweaqua, Ill.

Situations Wanted

WANTED: Affiliation with company interested in present or postwar foreign operations. 15 years' experience all phases European marketing, transportation, etc. Perfect knowledge French, German, some Spanish, Italian. Box B-184, The Oil and Gas Journal, Tulsa, Okla.

SQUAD of Engineers Capable of handling Design and Drafting on Power Plants, Chemical or Refiners. Wish employment as a group. Box B-193, The Oil and Gas Journal, Tulsa, Okla.

CHEMICAL ENGINEER, age 38, formerly executive in head office refining department major oil company, now performing similar service in government, seeks return to private industry in position where wide experience would be most valuable. Thoroughly experienced and unusually skilled in coordinating functions of sales and refining divisions. The Oil and Gas Journal, Box B-223, Tulsa, Okla.

Help Wanted

ENGINEER — Mechanical, Chemical or Petroleum Refining graduate wanted by Mid-West manufacturer of refinery and gasoline plant equipment. Prefer man with operating or design experience. Permanent position open in company handling only high priority business. Reply stating training, experience, salary and include recent photograph. All replies confidential. The Oil and Gas Journal, Box B-220, Tulsa, Okla.

OIL FIELD Engine Company has openings for a salesman and a serviceman that can do some selling. These are salaried permanent positions with an established concern. Must be able to leave town. Our men have been advised of this ad. Applications from those now employed in War Industry will not be considered. Give full particulars in letter to The Oil and Gas Journal, Box B-221, Tulsa, Okla.

Help Wanted

MECHANICAL ENGINEER
Established midwestern pump manufacturer, doing high priority work, desires pump designer, experienced in centrifugal and reciprocating equipment for refinery service. Those who have had marine experience in addition preferred. This position will be permanent and will lead to position of chief engineer. Please reply giving all personal details as well as professional qualifications. All replies confidential. Box B-200, The Oil and Gas Journal, Tulsa, Okla.

WANTED
SUPERINTENDENT OF SERVICE by Chemical Company employing about 600 men. Location Gulf Coast. Must have knowledge and preferably experience in SAFETY ENGINEERING AND FIRE PREVENTION as applied to chemical plant and PERSONNEL AND EMPLOYMENT. Reply giving education, experience, references and salary expected in first letter. Box B-201, The Oil and Gas Journal, Tulsa, Okla.

ENGINEERS WANTED
Petroleum or Chemical Engineers for refinery process control; Midwestern Refinery; University Engineering School graduate with basic knowledge of fluid flow and heat transfer; advancement opportunity; in reply state present employment, past experience, education, marital status, minimum salary expected, and recent photograph. Box B-204, The Oil and Gas Journal, Tulsa, Okla.

POSITION OPEN—Chemical Engineer; Middle Western Oil Company. Must be experienced in general refinery operations, processing and development work; preferably lubricating oil manufacture, solvent refining etc. State education, experience, expected starting salary and draft status. The Oil and Gas Journal, Box B-212, Tulsa, Okla.

DRAFTSMEN
Midwestern Oil Refinery; 2 years or more experience on process piping, structural or electrical drafting. state age, marital status, education, past experience and minimum salary expected. The Oil and Gas Journal, Box B-211, Tulsa, Okla.

DESIGNING ENGINEER
Mechanical or Chemical Engineering education with five or more years experience in refinery process and equipment designing. In reply state present employment, past experience, education, marital status, and minimum salary expected. The Oil and Gas Journal, Box B-214, Tulsa, Okla.

POWER PLANT ENGINEER
Mid-West Industrial Plant; experienced in operation and maintenance of high pressure boiler plant. State present employment, past experience, education, marital status, and minimum salary expected. The Oil and Gas Journal, Box B-210, Tulsa, Okla.

Patent Attorneys

PATENTS — TRADE MARKS
All cases submitted given personal attention.
Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees—FREE.
LANCASTER, ALLWINE & ROMMEL
Patent Law Offices
418 Bowen Bldg., Washington, D. C.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Old Press, 215 East Third St., Tulsa, Okla.

Equipment Wanted

WANTED
Large Steel Storage Tanks and Structural Steel Buildings.
GREENSPON'S
National Stock Yards
(St. Clair County), Ill.

OPERATOR wishes to purchase for cash 3 or 4 used Cummins Diesel L1-600 Drilling Engines with chain transmission, slush pump and hoisting equipment of size of Wilson Giant or Titan drawworks. Please communicate all particular including prices to P.O. Box 5051, Metropolitan Station, Los Angeles, Calif.

WANTED
2—35,000-55,000 bbl. storage tanks
2—1300' air compressors.
20—25 ton locomotive cranes.
R. C. STANHOPE, INC.
60 E. 42nd St., New York, N. Y

WANTED: A rotary clay burner approximately 3' diameter x 30' long. Also one high pressure tower approximately 7' diameter x 15' long with minimum shell ½" thick and ¾" thick heads. Box B-202, The Oil and Gas Journal, Tulsa, Okla.

WILL PAY CASH
Storage tanks, abandoned pipe lines or wells, gasoline plants, refineries or any material accumulating from the oil fields regardless of location. WILL HANDLE UNLIMITED DEALS.
PLANT and EQUIPMENT PURCHASING CORP.
606 Fountain Sq. Bldg., Cincinnati, Ohio

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

PRIVATE CAR OWNERS:

What will your older ones earn, net, while the War lasts?

What after the War?

What will they be worth then—only Scrap price?

Consider, then, their abnormal worth today?

You may realize TODAY—

Mileage returns of next several years! Present book carriage! Appreciable profit *additionally*!

Ordinarily, anyone of these three features is considered satisfactory realization!

You would, also, amortize NOW Replacement later with new and modern cars from the avoidance and saving of present excessive maintenance costs, the profit and accumulated interim interest, etc., etc.!

Obtain our quotation without obligation.

IRON & STEEL PRODUCTS, Inc.
37 years' experience
13412 S. Brainard Ave., Chicago, Ill.
***"ANYTHING* containing IRON or STEEL"**

REFINERY EQUIPMENT

We have three complete refining units available. Each must be sold in its entirety. Inventories furnished on request. Also—miscellaneous towers, vessels, pumps—valves—fittings, steel and cast iron.

Send Us Your Inquiries

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
Riverside at Second, Kansas City, Kansas

Robert W. Duden
Twenty-First at Union, Tulsa, Oklahoma

LIQUIDATING LATE TYPE REFINERY

2000 bbl. Pipe Still, 2½" ID x 2 5/16" OD x 20' Tubes Alloy Headers — 2 Heat Exchangers — Complete Copper Sweetening Unit — New Carload Ethyl Plant — Storage Tanks — 30 Pumps, all sizes — Valves — Fittings — Pipe — 2 Gasoline Tank Trucks, 3 Compartments Each.

THE PLAINS OIL & REFINING CORPORATION
GREAT BEND, KANSAS

NEW—COMPLETE

2 Jensen Bros. pumping units, size 12D, cable type, 34" stroke, with Allis-Chalmers Model B-15 power units equipped with Ensign carburetors for butane-natural gas-gasoline, with controls, etc.

SONKEN-GALAMBA SUPPLY CO.
TULSA, OKLAHOMA

FOR SALE: Oil Hill, Kansas 3 Sullivan improved N Hydraulics only $100.00 ea 6—3" x 4" GD chain driven power pumps. $50.00 ea. 4—2" Viking Pumps $10.00 ea 1—CN Sullivan Drill, $250.00. 1—Sullivan 20 drill only $250.00. 5—GD Power Pumps robbed, $50.00 ea. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: 12 K.W. Portable Light Plant Powered by 35 H.P. International Engine. Melton Supply Co., Seminole, Okla.

40,000 Feet 1-inch used galvanized pipe, reconditioned. Price 8c per foot f.o.b. Shreveport, La. American Pipe & Supply Co., 2335 Texas Ave., Shreveport, La.

Reconditioned, Tested and Guaranteed
Gate Valves for sale. Large stock, sizes 16" to 2", flanged end and screw end, various pressures.
Stock List and Prices on Request.
THE GATE VALVE SHOP
120 Tuke Box 1936
Pampa, Texas

FOR SALE at Wewoka: 1-10 ton Athey Trusswheel wagon, Model 843, Serial J616. $150. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: 1 Askenia Type Magnetometer #7970, $750.00. Cities Service Oil Co., Bartlesville, Okla.—H. D. Patridge.

50,000 FT. 2" Line Pipe. Screw & P. E. Also 3". 4", 6", 8" and other sizes. Large stock of fittings, valves & other material. GILBERT PIPE & SUPPLY. Electra, Tex.

FOR SALE
COMPRESSORS

Complete Repressuring or Air Lift Plant for Immediate Delivery.
2—13 & 5½ x 12 Ingersoll-Rand XOB compressors 400# pressure V-belt driven by 120 H.P. Chicago Pneumatic 3-cylinder vertical gas engines.
2—12 & 7 x 10 Chicago Pneumatic 400# pressure vertical compressors direct connected to 120 H.P. 3-cylinder Chicago Pneumatic vertical gas engines complete.
Used very little — excellent condition. Located on original foundation in Louisiana.

EARL E. KNOX COMPANY
Erie, Penna.

FOR SALE: Wilson-Mogul Drawworks with water cooled brakes and 100 H.P. International Motor. Melton Supply Co., Seminole, Okla.

FOR SALE: 7¼ x 18 O. W. S. Mud hog slush pump, with 16 groove sheave, new liners and valves. Good condition. Located at Longview, Texas. Superior Oil Corp., Tulsa, Okla.

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25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO
26 West 2nd St., Cincinnati, Ohio.

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

7' x 30' STEEL RIVETED Horizontal Storage Tanks. Also towers, vessels, etc. GILBERT PIPE & SUPPLY, Electra, Tex.

FOR SALE
55000 bbl. Steel Tank
5000 bbl. Steel Tank
Tidewater Equipment & Mac'y. Corp.
305 Madison Ave., New York, N. Y.

3" x 4" F&M Power Pump in excellent condition. Also Centrifugal & Steam Pumps. Gilbert Pipe & Supply, Electra, Tex.

FOR SALE
3—125 HP 350 WP Acme Boilers
3—125 HP 325 WP Broderick Boilers
2—125 HP 250 WP Donovan Boilers
10,000 Ft. 4" API Full Hole Drill Pipe
4,600 Ft. 4" Acme Full Hole Drill Pipe.
Major Tool & Supply Co., Okla. City, Okla.

DIESEL—GAS—ENGINES
Large selection — All sizes and types. Generator units, marine engines, gasoline engines, auxiliaries—boilers, steam engines, and turbo-generator sets.
Complete information on request.
A. G. SCHOONMAKER COMPANY
48 Church Street, New York, N. Y.

ROTARY PUMPS
One Viking ET-4 rebuilt direct connected to 2¾ to 1 gear reducer. 150-200 gpm. 100 pounds.

One 4" Worthington high pressure type GR. 120 to 200 gpm. 300 pounds maximum pressure.

New pump performance guaranteed.
CORKEN PUMP & MACHINERY CO.
206 East Grand Oklahoma City

FOR SALE: 27½" Ideal Rotary Table, 5 sheave 200 ton Crown Block, 4 sheave 72" traveling block, 8" Ideal enclosed rotary hook. Melton Machinery & Supply Co., Seminole, Okla.

20" x 12" ING. Rand Vacuum Pump. Also Compressors, Gas Engines, Bessemer parts. Gilbert Pipe & Supply, Electra, Tex.

FOR SALE: 7¼ x 14 Oil Well Power Slush Pump. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: One No. 6, D-1618 Marley tapered type cooling tower with drift eliminators, good condition. Inquire Eason Oil Co., Enid, Okla.

1000—8" Dresser Couplings, complete with bolts and gaskets, thoroughly reconditioned, good as new. Sonken-Galamba Corporation, Kansas City, Kans. Phone Victor, 9243.

FOR SALE—One 96 foot rotary drilling derrick now standing near Seminole, Oklahoma. Good condition. price $600.00. Inquire Eason Oil Co., Enid, Okla.

FOR SALE: 2—75 H.P. Fairbanks Morse Type Y Oil Engines. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: Star Mfg. Company, portable cooling tower, telescoping type, 7' wide, 13' long, 8' high. All steel. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: Four 125-HP, 250# working pressure boilers, Oilfield type; also one 7" R. B. Union Tool unitized draw works, good condition, almost same as new. Inquire, T. T. Eason & Company, Enid, Okla.

FOR SALE
1—10,000 BBL. Steel Bolted Storage Tank
Al Brown Kilgore, Tex.

FOR SALE 38 x 7, 40 x 8, and 10.50 x 24 used tires and tubes. Patridge, Cities Service Oil Co., Bartlesville, Okla.

3—150-HP 150# Working Pressure horizontal Return Tubular Boilers with breeching, in good condition; also unusually good stock of three, four and six inch valves and fittings for refinery and pipe line service. Call or write Eason Oil Co., Enid, Okla.

FOR SALE — OIL STORAGE TANKS
6—31,000 bbl. with breather roofs.
3—31,000 bbl. without roofs.
In first class condition — ready for immediate delivery.
1—Parkersburg SC-11 Pumping Unit, Stroke 5' to 11'.
JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards (St. Clair County), Illinois.

FOR SALE: One complete Thrift Hydraulic Pipe Pulling Outfit. Cheap. F. O. Wilkins, 201 Commerce Building, Mt. Pleasant, Michigan.

FOR SALE: 2—175 H.P. Heinie water tube boilers in first class condition, complete with all connections, 30-ft. steel breeching and 80-ft. riveted stack. East Texas Pipe & S. Co., Kilgore, Texas.

WE HAVE in stock for immediate shipment:
15 HP., Fairbanks-Morse Oil Engine.
25 HP., Tips Oil Engines.
40 HP., Tips Convertible Engines
40 HP., Tips Gas Engines
50 HP., Tips, 2 cyl., Oil Engine.
120 HP., Tips, 3 cyl., Oil Engine.
TIPS ENGINE WORKS
Austin, Texas.

LINE PUMPS
Two—2½" 4 stage Byron Jackson multiplex with 150 h.p. motors and controls.
CORKEN PUMP & MACHINERY CO.
206 East Grand Oklahoma City

FOR SALE
35 H.P. Superior Gas Engine and 16 foot Band Wheel Power. Condition A-1. The Geo. McGinley Supply Co., Bowling Green, Kentucky.

FOR SALE: Complete Wilson Portable Rotary Rig with telescoping mast, suitable for 2,000 ft. drilling. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: At Oklahoma City six #1 Smith 4' 6" x 16' Standard Oil and Gas Separators. Patridge, Cities Service Oil Co., Bartlesville, Oklahoma.

FOR SALE: One Waukesha Model CFR Fuel Testing Unit complete with knockmeter assembly. Good condition. Inquire Eason Oil Company, Enid, Okla.

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1 FRANKS Winch, mounted on International Dual Wheel truck, servicing wells up to 3,000 ft. Good order. H. F. Ryan, 909 Tulsa Loan Bldg., Tulsa, Okla.

FOR SALE: 8600 gallon gasoline storage tank—power—pressure and vacuum pump—Superior engine. Hugh Howerton, Phone 802, Haskell, Okla.

FOR SALE: Wilson Master Drilling Unit mounted on 196" W. B. Ford. 5 x 8 GD Pump 2000 ft. Cap. in A-1 condition. Box 247, Mt. Carmel, Ill.

FOR SALE

We offer 522. 55-ton all-steel, self-clearing DOUBLE HOPPER CARS consisting of:

160 USRA construction; built 1921-1922; with A-B brakes; 1880 cubical feet capacity.

363 built 1910-1915; with KD-1012 brakes, 1683 feet capacity.

ALL HAVE FULL "U" CAST STEEL TRUCK FRAMES.

Purchaser must buy all.

PRICE: $1700.00 each f.o.t. Pennsylvania

TERMS: Cash with purchase.

DELIVERY CAN COMMENCE IMMEDIATELY AND BE COMPLETED IN ABOUT 60 DAYS—AND VERY POSSIBLY SOONER.

Some $30,000 to $40,000 NEW REPAIR MATERIALS also available which you may wish to have inspected at the same time.

TIME and EXPEDITION ESSENTIAL and DESIRABLE.

Yours for Victory,

IRON & STEEL PRODUCTS, Inc.

37 years' experience
13412 S. Brainard Ave., Chicago, Illinois
"ANYTHING containing IRON or STEEL"

Steel VALVES!

Cast and Forged
Also
Cast Iron Valves
Standard and High Pressure
Every Type Used in an Oil Refinery
All Expertly Reconditioned and GUARANTEED to Perform Like New.

No Delays

Immediate Delivery
YOU SAVE 25%
Over Cost of New Valves

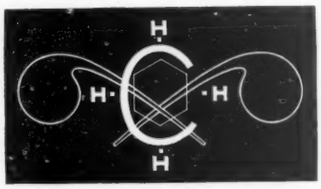
Brown-Strauss Corporation
1446 Guinotte . . . Kansas City, Mo.

Incorporation

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

Journalisms:

THIS week, The Oil and Gas Journal might be introducing the symbol of the new petroleum-chemistry industry. At least



it's the symbol that will identify special features to appear in the Journal on that subject. Using the familiar crossed alembics of the Chemical Warfare Service as the background, the structural formulas of the simplest petroleum hydrocarbon, methane (CH_4) was superimposed with the benzene ring (C_6H_6) retained to designate the family of cyclic compounds that can also be made from petroleum.

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WITH the prospect of an acute shortage of petroleum products facing certain sections of the country, and with governmental agencies investigating means of relieving the shortage, the nation is learning how vitally important the oil industry is to the country's existence. Almost forgotten in the current crisis, the A.P.I. points out, are the more than 2,000,000 dwelling units along the Atlantic seaboard which, in this age of progress, still use kerosene or gasoline for household lighting. These homes have no other means of illumination than the gasoline or kerosene lamp. Three-fourths of these petroleum-lighted homes are in the six South Atlantic states of Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida.

•

SINCE the war started the Journal's editors in all parts of the country have had many new devices and suggested substitutes for oil-country materials called to their attention. Usually they come from people outside the industry. In many cases they have been able to obtain wide publicity for their proposals on the air and in the press.

Relative to this situation one of the industry's well-known pipe-line operators writes: "I thought it might be well to tell you that . . . . did not consult with us and that the information relative to our interest in a pipe line of clay is not correct. It looks to me as though the nontechnical press has gone off half-cocked again on a technical subject."

Those from the petroleum industry who have charge of the Government's several war pipe-line projects have investigated many new materials for pipe but for high-pressure work no substitutes for steel are in the offing.

CALENDAR

August

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, North Louisiana group, Shreveport, La., August 14.

September

NATIONAL PETROLEUM ASSOCIATION, annual meeting, Hotel Traymore, Atlantic City, N. J., September 16-18.

October

INTERSTATE OIL COMPACT COMMISSION, autumn meeting, Palmer House, Chicago, Ill., October 1-3.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, regional meeting, St. Louis, Mo., October 2.

AMERICAN GAS ASSOCIATION, annual meeting, La Salle Hotel, Chicago, Ill., October 5-6.

NATIONAL SAFETY CONGRESS and EXPOSITION, Palmer House, Chicago, October 5-9.

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, twenty-third annual meeting, Dallas, Tex., October 8-10.

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, Wichita, Kans., October 9.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, fall meeting, Rochester, N. Y., October 12-14.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Hotel Ambassador, Los Angeles, Calif., October 12-17.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, fall meeting, Hotel Severin, Indianapolis, Ind., October 14-15.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, thirteenth annual convention, Wichita, Kans., October 19-21.

NATIONAL STRIPPER WELL ASSOCIATION, annual meeting, Wichita, Kans., October 19.

SOCIETY OF AUTOMOTIVE ENGINEERS, Mid-west Fuels and Lubricants regional meeting, Tulsa, October 22-23.

NATIONAL LUBRICATING GREASE INSTITUTE, tenth annual meeting, New Orleans, La., October 25-29.

NATIONAL SAFETY CONGRESS AND EXPOSITION, thirty-first annual meeting, Sherman Hotel-Palmer House, Chicago, Ill., October 27-29.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Austin, Tex., October 29-31.

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, Shreveport, La., October 30.

November

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, Los Angeles, Calif., November 5-6.

CALIFORNIA NATURAL GASOLINE ASSOCIATION, Los Angeles, Calif., November 6.

AMERICAN PETROLEUM INSTITUTE, twenty-third annual meeting, Palmer House, Chicago, Ill., November 9-13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, thirty-fifth annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio, November 16-18.

AMERICAN CHEMICAL SOCIETY, national chemical exposition and national industrial chemical conference, Sherman Hotel, Chicago, Ill., November 17-21.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting, New York, November 30-December 4.

December

PETROLEUM ACCOUNTANTS SOCIETY OF OKLAHOMA, Hotel Mayo, Tulsa, December 17.

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